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XV Sync™
Installation Guide & User Manual

Abstract

Abstract

This document contains work instructions related to installing, configuring, and utilizing XV Sync™ version 3.2 and above (compatible with XrayVision® version 3.11 build 47).

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1 XV SYNC OVERVIEW

1.1 What is XV Sync?

XV Sync enables the synchronization of multiple Apteryx databases for a dental practice - whether across town or across the country.

For the synchronization to operate, the software must be installed and running on *at least two servers* (hereafter referred to as "sync servers") with internet connections and/or network access to their respective databases.

A sync server may either be used to:

- Initiate sync operations with other sync servers.
- Receive synchronizations operations initiated by other remote sync servers.
- Both initiate and receive sync operations.

Sync operations can be manually started or scheduled for weekly recurrence.

1.2 Implementing XV Sync

XV Sync provides multiple methods for synchronizing databases. In general, there are three different types of operations that a sync server can perform:

- **Forward** – Any sync server in an organization can to target a specific sync server and initiate a forward action to send patient images to its XrayVision® database.
- **Retrieve** - Any sync server in an organization can target a specific sync server and initiate a retrieve action to obtain patient images from its XrayVision® database.
- **Synchronize** - Any sync server in an organization can target a specific sync server and initiate a synchronize operation, forwarding and retrieving patient images between the two XrayVision® databases.

The implementation strategy Apteryx, Inc. recommends requires the following:

- One sync server (e.g. at a Central Business Office) to schedule and initiate synchronization requests.
- One or more remote sync servers (e.g. at satellite locations) to receive synchronization requests.

Refer to Appendix A: XV Sync Implementation Scenarios for detailed description of recommended strategies to deploy XV Sync.

It must be possible for sync servers to be able to communicate with each other. Accordingly, a Wide Area Network (WAN) must exist. This is typically accomplished over the internet via a VPN connection or forwarding of port 1011 by each location's router. Please contact your network administrator to make sure a viable WAN exists before implementing XV Sync.

1.3 Important Patient Database Considerations

XVSync is designed to preserve data above all else. For this reason, the synchronization of remote databases will NOT automatically delete images (for example, if an image is moved from Patient_1 to Patient_2, the original copy of the image at the remote sites will NOT automatically be deleted from Patient_1). Operations that require removal of files and/or patients will need to be performed by the Organization at EACH of their synchronized databases.

Functions that will require the Organization to manually address image and/or patient removal at each synchronized location include:

- Moving an image from one patient to the other.

- Merging patients together.
- Deleting an image.
- Deleting a patient.

Please note that during these types of manual data removal, you should halt all XVSync operations until database operations are complete at each location.

1.4 Minimum Requirements

- One Master XV Sync Server
- At least one Child XV Sync Server
- Wide Area Network (WAN) with internet connectivity established via:
  - VPN, or
  - Forwarding of port 1011 by Router to sync server's IP
- XrayVision® 3.11 build 47 or above residing on Master and Child Sync Servers
- Apteryx Servicer (optional)

2 INSTALLING XV SYNC

2.1 Sync Server System Requirements

Apteryx recommends the following for optimum performance:

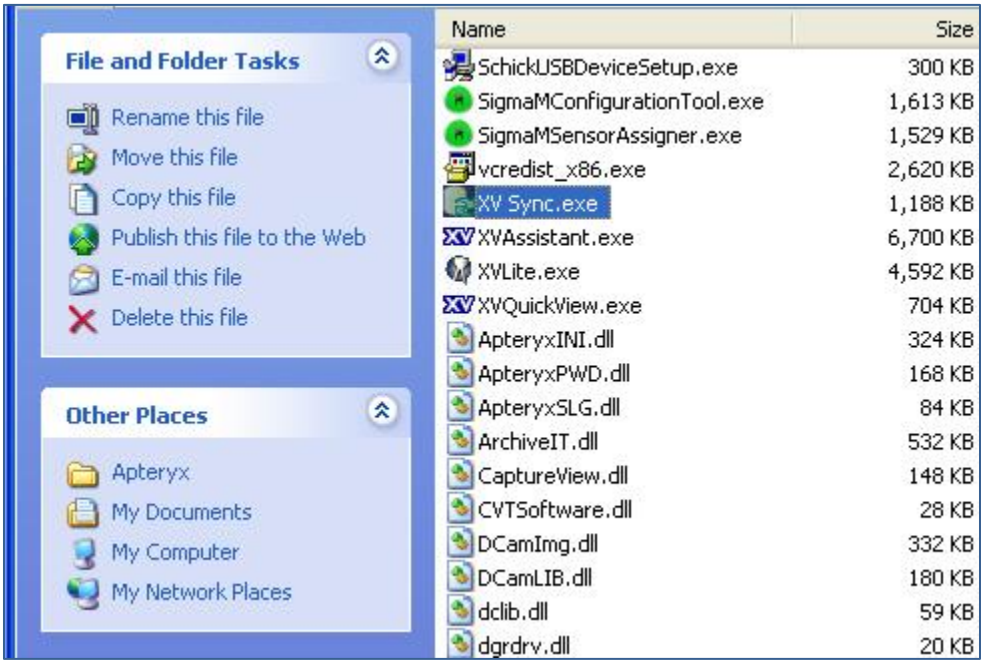
- 32-bit or 64-bit Windows Operating Systems (Windows XP or greater)
- Internet transfer speeds/bandwidth maximized to accommodate anticipated size of files to be transferred.
- Disk space to accommodate the anticipated growth of patient databases
- Time necessary to backup the database at each location

Refer to Appendix E: XV Sync Performance Optimization to complete the Image Volume Worksheet that can assist Apteryx, Inc. in making recommendations to optimize the performance of your implementation.

2.2 Pre-Installation Instructions

XV Sync is included as an add-on application on the XrayVision® Install CD so it may already be installed as a trial version. To verify:

2.2.1 Check the Apteryx Imaging install directory on the Server for an executable file called **XV Sync.exe**.



2.2.2 If the file does not exist in the Apteryx Install directory, refer to Installing XV Sync on the Server for detailed instructions.

2.2.3 If the file exists, there is no need to run the XV Sync Installer. Refer to Upgrading to the Latest Version of XV Sync.

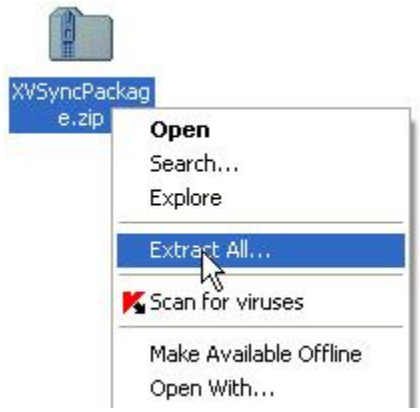
2.3 Installing XV Sync on the Server

The XV Sync Installer program is provided electronically in a compressed ZIP file either called:

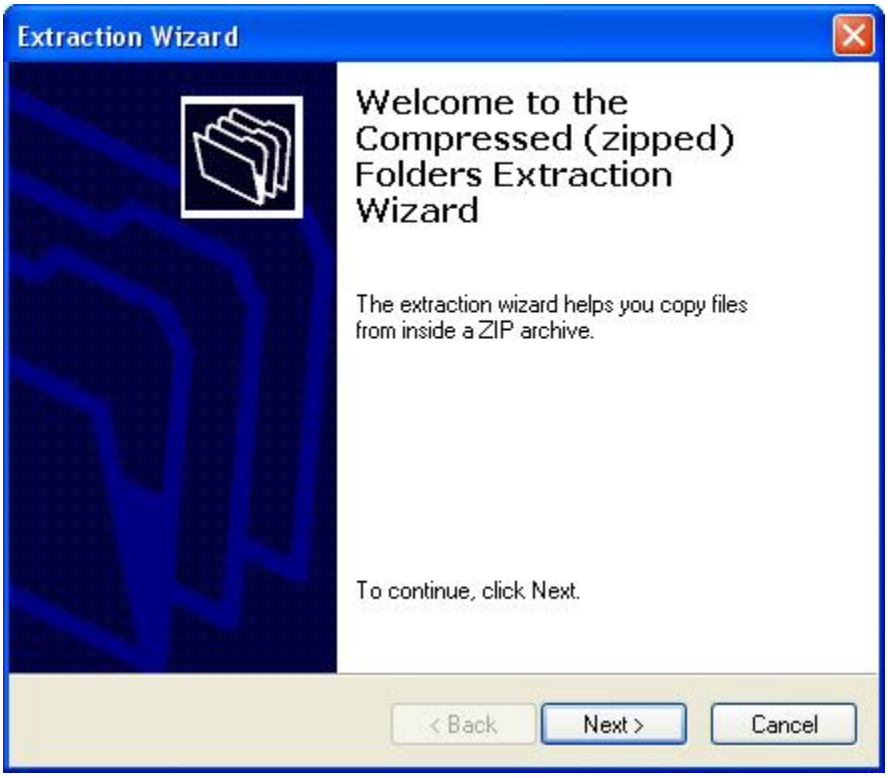
- XVSyncPackage.zip, or
- XV_Sync_and_Apteryx_Servicer.zip

The zip file additionally includes an Apteryx Servicer installer program. Refer to Setting Up XV Sync to run with Apteryx Servicer for installation instructions.

2.3.1 Right-click on the zip file and select *Extract All*.

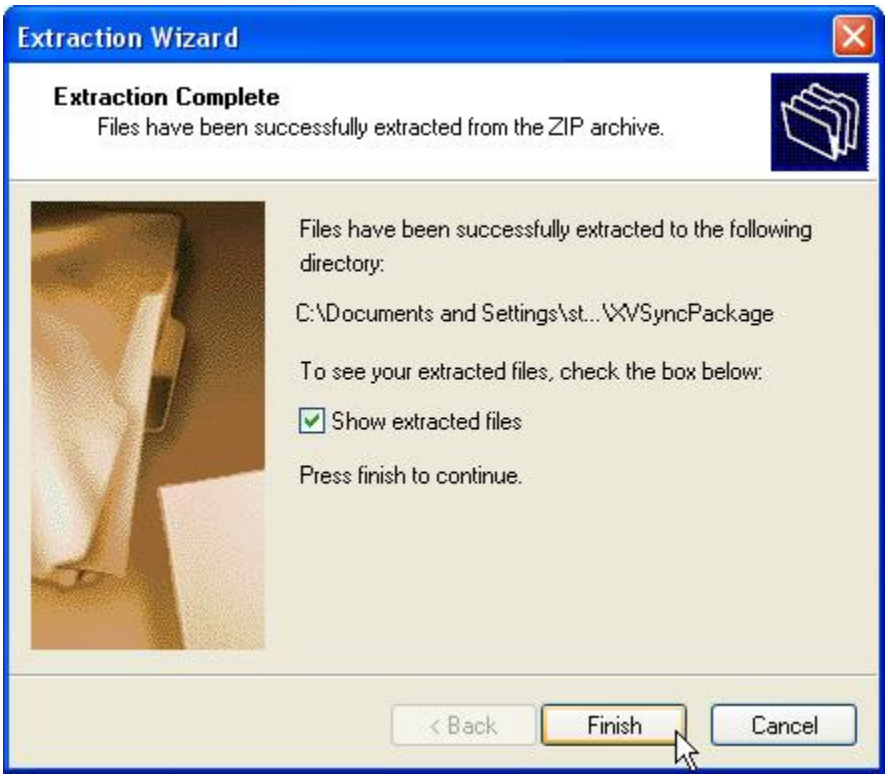


2.3.2 The Windows Extraction Wizard will launch. Click **Next** to continue with the extraction process.

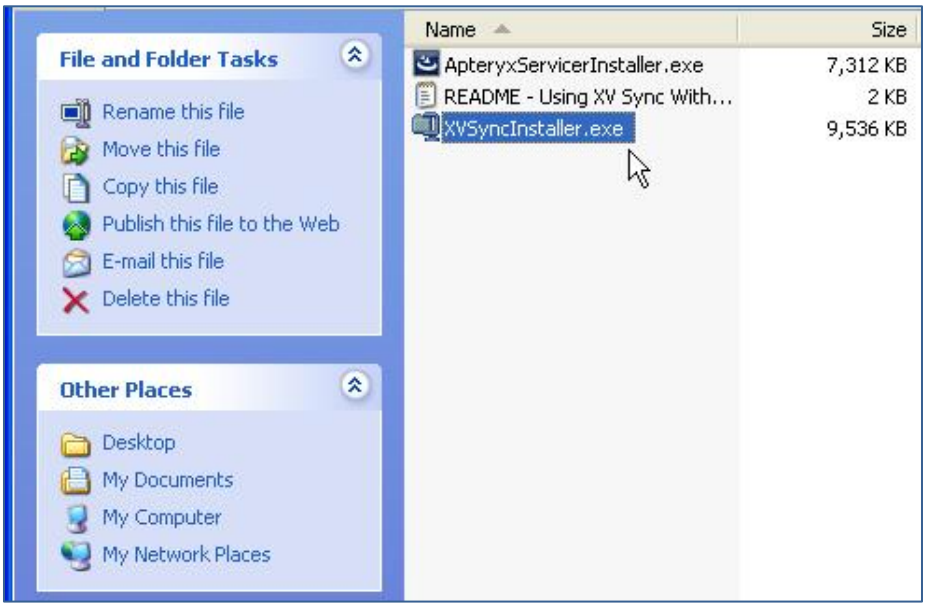

Extraction Wizard
Welcome to the Compressed (zipped) Folders Extraction Wizard
The extraction wizard helps you copy files from inside a ZIP archive.
To continue, click Next.
< Back
Next >
Cancel

2.3.3 Make note of the directory that the compressed files will be extracted to. Click **Next** to continue.

2.3.4 The files will be extracted to the specified directory when the extraction completes. Select **Finish** to exit the wizard


Extraction Wizard
Extraction Complete
Files have been successfully extracted from the ZIP archive.
Files have been successfully extracted to the following directory:
C:\Documents and Settings\st...\XVSyncPackage
To see your extracted files, check the box below:
Show extracted files
Press finish to continue.
< Back
Finish
Cancel

2.3.5 The extracted files will display in Windows Explorer. Double-click on **XVSyncInstaller.exe** to begin the install process.



2.3.6 The WinZip Self-Extractor launches. Click on the **Setup** button.

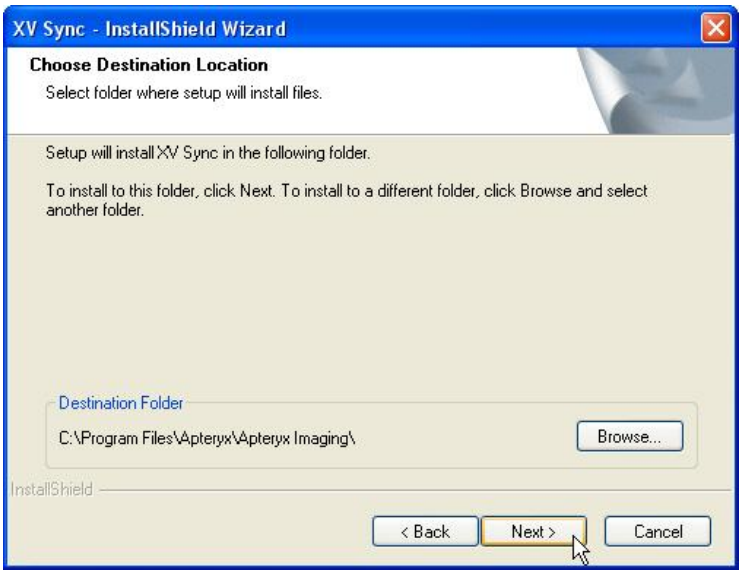
2.3.7 The XV Sync Install Wizard initializes and the welcome screen displays. Click **Next** to continue.

XV Sync - InstallShield Wizard
Welcome to the InstallShield Wizard for XV Sync
The InstallShield Wizard will install XV Sync on your computer. To continue, click Next.
< Back
Next >
Cancel

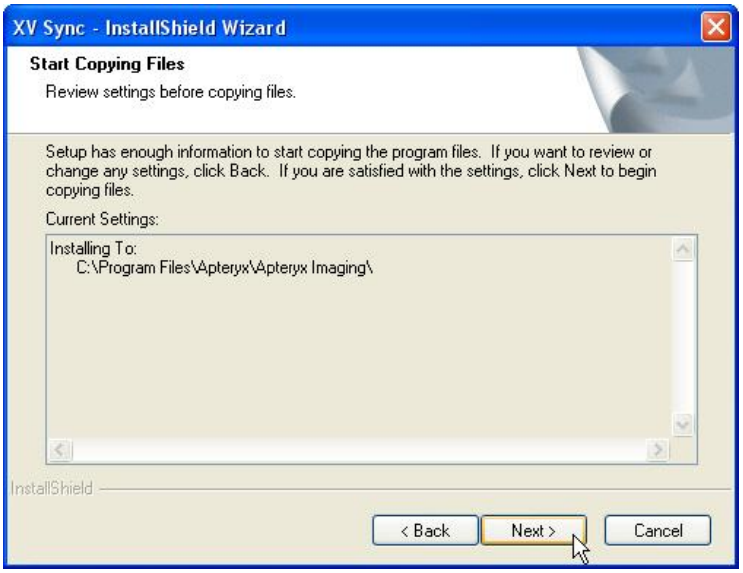
2.3.8 The customer information screen displays. Enter information in the 'User Name' and 'Company Name' fields. Click **Next** to continue.

2.3.9 The 'Choose Destination Location' screen displays. The installer will attempt to install XV Sync in the same folder as XrayVision®, typically *C:\Program Files\Apteryx\Apteryx Imaging*.

If different, select **Browse** to navigate to the actual location. Click **Next** to continue.


XV Sync - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
Setup will install XV Sync in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\Apteryx\Apteryx Imaging\
Browse...
InstallShield
< Back
Next >
Cancel

2.3.10 Click **Next** to continue with the installation.


XV Sync - InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
Installing To:
C:\Program Files\Apteryx\Apteryx Imaging\
InstallShield
< Back
Next >
Cancel

2.3.11 Once the installation is complete, click on the **Finish** button to close the install wizard.

2.4 Upgrading to the Latest Version of XV Sync

Follow the directions below to assure the latest version of XV Sync is installed on the server.

2.4.1 Launch any internet browser (Internet Explorer, Mozilla Firefox, etc.) and go to the Apteryx website located at http://www.apteryx.com.

2.4.2 Navigate to the 'Updates, Add Ons, and Patches' website by clicking on *Support* > *Updates* > *XrayVision & XV Lite*.

2.4.3 Select the Component Updates & Add-Ons link.

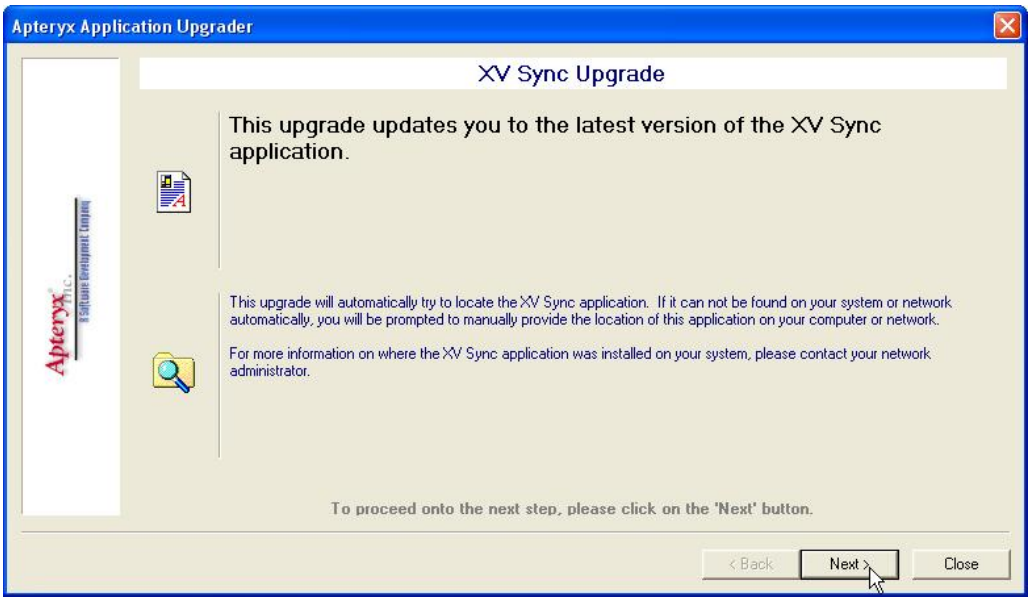
2.4.4 Select the XV Sync Updater link. Click **Run** to download and run the upgrade.

File Download - Security Warning
Do you want to run or save this file?
Name: XVSyncUpgrade.EXE
Type: Application, 937KB
From: www.apteryxware.com
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

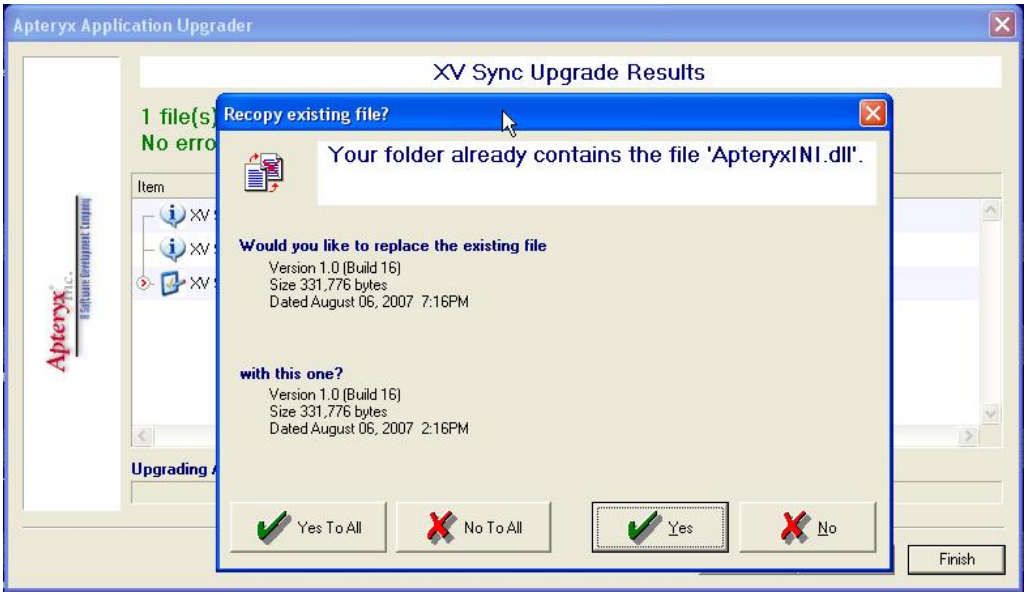
2.4.5 A security warning dialog box may display. Click **Run** to continue with the download.

Internet Explorer - Security Warning
The publisher could not be verified. Are you sure you want to run this software?
Name: XVSyncUpgrade.EXE
Publisher: Unknown Publisher
Run
Don't Run
This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust. How can I decide what software to run?

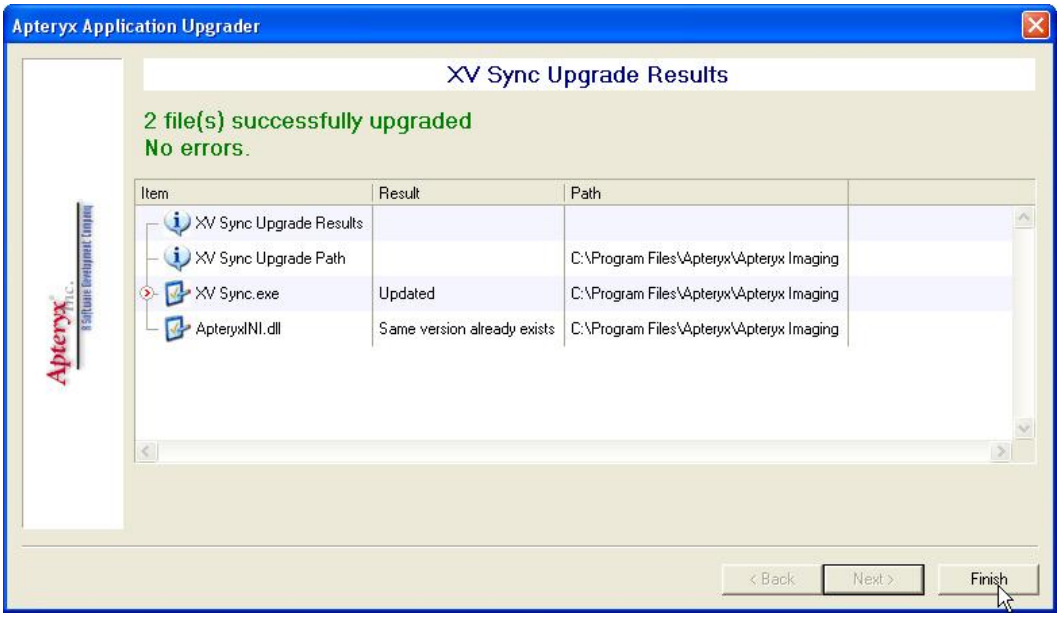
2.4.6 Once the download completes, the XV Sync Upgrade application will automatically launch. Select **Next** to continue.


Apteryx Application Upgrader
XV Sync Upgrade
This upgrade updates you to the latest version of the XV Sync application.
This upgrade will automatically try to locate the XV Sync application. If it can not be found on your system or network automatically, you will be prompted to manually provide the location of this application on your computer or network.
For more information on where the XV Sync application was installed on your system, please contact your network administrator.
To proceed onto the next step, please click on the 'Next' button.
< Back
Next >
Close

2.4.7 The upgrader may come across some files that already exist. Click **Yes to All** to replace any existing files.



2.4.8 Once the upgrade is complete, click on the **Finish** button to close the upgrade wizard.



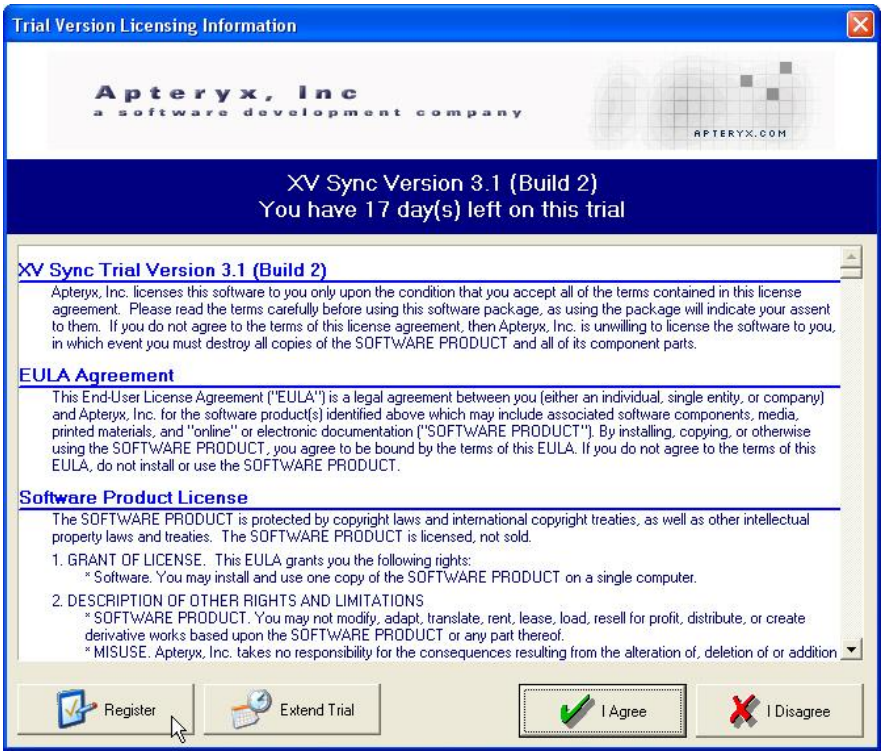
2.5 Registering XV Sync on the Server

For XV Sync to operate, the software must be installed and running on at least two workstations with internet connections and network access to their respective databases. When purchased, the base package contains two registration numbers to cover two locations/servers. Single additional servers can be added with the "XV Sync +1 Server" package available on the Apteryx Store Online.

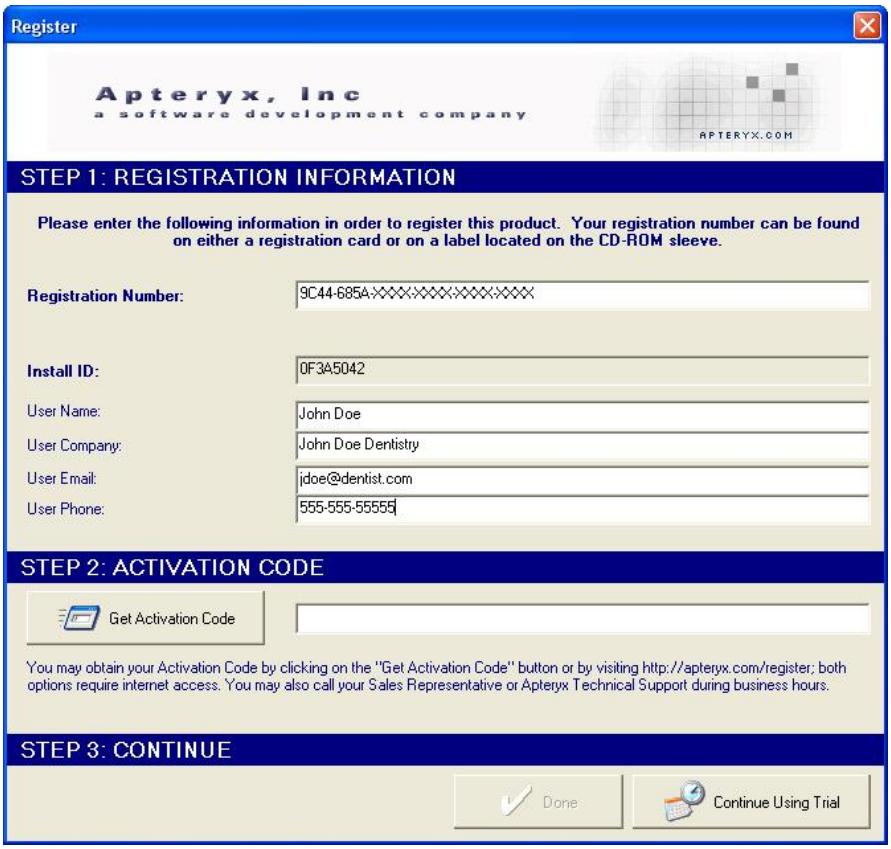
To register XV Sync:

2.5.1 Double-click on the **XV Sync.exe** icon available on the server desktop to launch XV Sync.

2.5.2 The 'Trial Version Licensing Information' screen displays. Click on the **Register** button.


Trial Version Licensing Information
Apteryx, Inc
a software development company
APTERYX.COM
XV Sync Version 3.1 (Build 2)
You have 17 day(s) left on this trial
XV Sync Trial Version 3.1 (Build 2)
Apteryx, Inc. licenses this software to you only upon the condition that you accept all of the terms contained in this license agreement. Please read the terms carefully before using this software package, as using the package will indicate your assent to them. If you do not agree to the terms of this license agreement, then Apteryx, Inc. is unwilling to license the software to you, in which event you must destroy all copies of the SOFTWARE PRODUCT and all of its component parts.
EULA Agreement
This End-User License Agreement ("EULA") is a legal agreement between you (either an individual, single entity, or company) and Apteryx, Inc. for the software product(s) identified above which may include associated software components, media, printed materials, and "online" or electronic documentation ("SOFTWARE PRODUCT"). By installing, copying, or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, do not install or use the SOFTWARE PRODUCT.
Software Product License
The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.
1. GRANT OF LICENSE. This EULA grants you the following rights:
* Software. You may install and use one copy of the SOFTWARE PRODUCT on a single computer.
2. DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS
* SOFTWARE PRODUCT. You may not modify, adapt, translate, rent, lease, load, resell for profit, distribute, or create derivative works based upon the SOFTWARE PRODUCT or any part thereof.
* MISUSE. Apteryx, Inc. takes no responsibility for the consequences resulting from the alteration of, deletion of or addition
Register
Extend Trial
I Agree
I Disagree

2.5.3 The registration screen displays. Enter the required information and select the **Get Activation Code** button.


Register
Apteryx, Inc
a software development company
APTERYX.COM
STEP 1: REGISTRATION INFORMATION
Please enter the following information in order to register this product. Your registration number can be found on either a registration card or on a label located on the CD-ROM sleeve.
Registration Number:
9C44-685A-XXXX-XXXX-XXXX-XXXX
Install ID:
0F3A5042
User Name:
John Doe
User Company:
John Doe Dentistry
User Email:
jdoe@dentist.com
User Phone:
555-555-55555
STEP 2: ACTIVATION CODE
Get Activation Code
You may obtain your Activation Code by clicking on the "Get Activation Code" button or by visiting http://apteryx.com/register; both options require internet access. You may also call your Sales Representative or Apteryx Technical Support during business hours.
STEP 3: CONTINUE
Done
Continue Using Trial

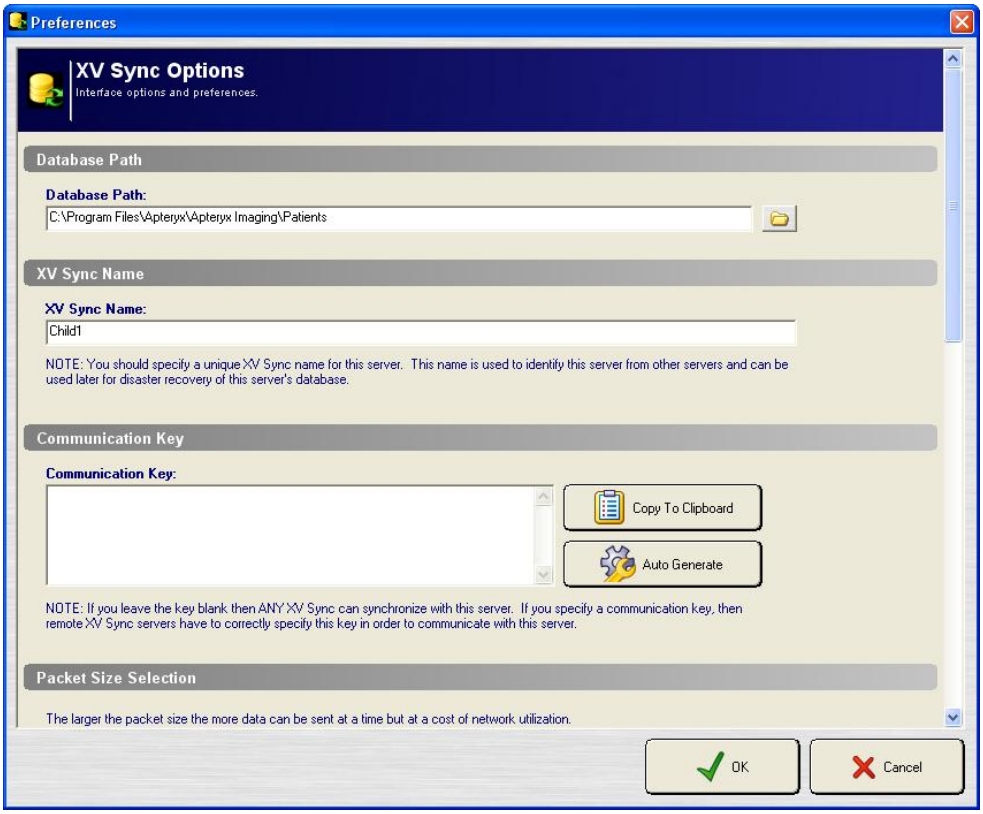
2.5.4 Click **Done** to complete the registration process and launch XV Sync.

3 SERVER SETUP & CONFIGURATION

3.1 Setting up XV Sync Preferences and Interface Options

In order for other XV Sync servers to synchronize with the sync server being configured, at minimum an administrator must specify the path to the XrayVision® patient database and provide a name for the sync server.

3.1.1 From the navigation toolbar on the left, select **Preferences** to open and configure the 'XV Sync Options' screen.


Preferences
XV Sync Options
Interface options and preferences.
Database Path
Database Path:
C:\Program Files\Apteryx\Apteryx Imaging\Patients
XV Sync Name
XV Sync Name:
Child1
NOTE: You should specify a unique XV Sync name for this server. This name is used to identify this server from other servers and can be used later for disaster recovery of this server's database.
Communication Key
Communication Key:
Copy To Clipboard
Auto Generate
NOTE: If you leave the key blank then ANY XV Sync can synchronize with this server. If you specify a communication key, then remote XV Sync servers have to correctly specify this key in order to communicate with this server.
Packet Size Selection
The larger the packet size the more data can be sent at a time but at a cost of network utilization.
OK
Cancel

3.1.2 Complete the following fields:

3.1.2.1 'Database Path' (required) - Verify that the folder path defined in the field is pointing to the *Patients*\ folder of Apteryx imaging software installed on the sync server (typically *C:\Program Files\Apteryx\Apteryx Imaging\Patients*).

If not, select the folder icon ( ) to browse and select the actual database path to the *Patients*\ folder in the Apteryx install directory.

3.1.2.2 'XV Sync Name' (required) - Enter a unique name in the text box to identify the sync server (e.g. "Child1").

3.1.2.3 'Communication Key' (Optional) - If desired, select **Auto Generate** to create a unique key for additional communication security.

The 'XV Sync Name' and 'Communication Key' generated will need to be supplied to administrators configuring other sync servers to allow connections.

3.1.2.4 'Packet Size Selection' (Optional) – ***Note:*** *The default size specified in XV Sync is 100.0 KB. Increasing the packet size may task the network's bandwidth.*

3.1.2.5 'Email Notifications' (Optional) – XV Sync can be configured to send useful email notifications that inform administrators when synchronizations with other sync servers start and complete. Additionally, a 'sync error' email notification will be sent whenever synchronizations fail to complete. Refer to Appendix D: XV Sync Email Notifications for more information and detailed instructions.

3.1.2.6 'Multi-Homed Options' (Optional) – If a sync server has multiple internet connections, enter the primary 'IP' and 'Port' to be utilized for outgoing communications.

3.1.2.7 'Global ID Matching Options' (Optional) –

- **Enable Global ID Matching** allows the Child Sync Server to merge patient files from other sources that match by one of the following options:
    - ID Number only
    - Social Security (SS) Number only
    - Both ID and SS Number

  Patients that match on the selected criteria will be merged under the patient file from the last remote sync server.

  Warning: Enable this option ONLY if the entire organization utilizes a global ID scheme for patient identification. If not, images from different patients may be merged under one patient on the Master Sync Server.

- **Prevent data Wiping** – Option is enabled by default to avoid replacing non-global demographic information with blank content during a patient merge.

  Warning: It is strongly recommended not to disable this option. Contact Apteryx Support at **877-APTERYX (877-278-3799)** to learn about possible impacts to patient information during a merge.

3.1.4 Click **OK** to save the changes made to the 'XV Sync Options' screen.

3.2 Setting up the XV Sync Server Reception Settings

The sync server now needs to be setup to allow connections from other sync servers.

3.2.1 From the navigation toolbar on the left, select **Server Connection Settings** > **Edit My Server Reception Settings** to open the 'Image Reception Settings' screen.

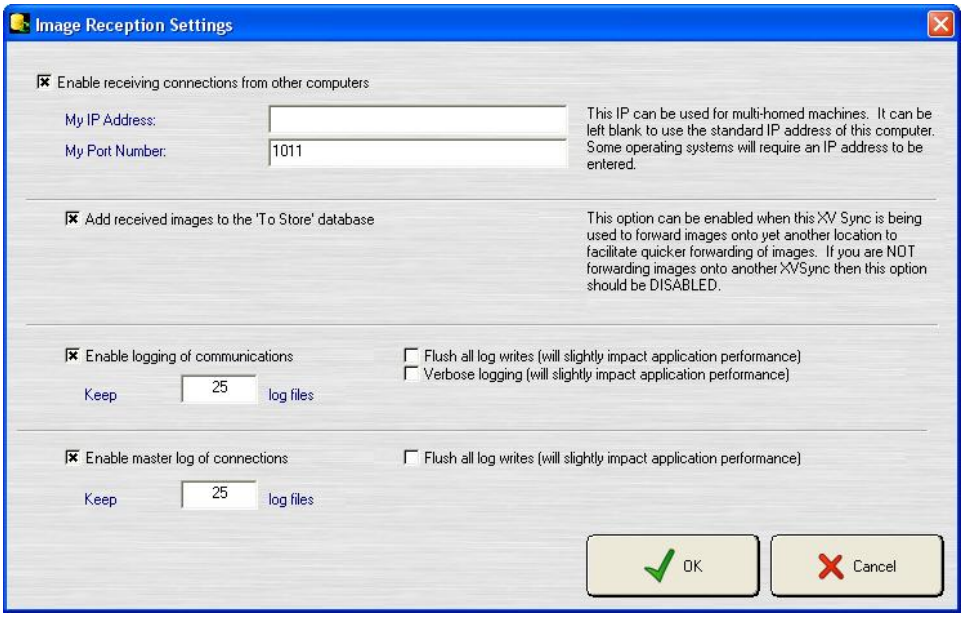


Image Reception Settings
Enable receiving connections from other computers
My IP Address:
My Port Number:
1011
This IP can be used for multi-homed machines. It can be left blank to use the standard IP address of this computer. Some operating systems will require an IP address to be entered.
Add received images to the 'To Store' database
This option can be enabled when this XV Sync is being used to forward images onto yet another location to facilitate quicker forwarding of images. If you are NOT forwarding images onto another XVSync then this option should be DISABLED.
Enable logging of communications
Keep
25
log files
Flush all log writes (will slightly impact application performance)
Verbose logging (will slightly impact application performance)
Enable master log of connections
Keep
25
log files
Flush all log writes (will slightly impact application performance)
OK
Cancel

3.2.2 Complete the following fields:

3.2.2.1 **Enable receiving connections from other computers** – Select this option to enable connections from the other sync servers.

3.2.2.2 'My IP Address' – XV Sync utilizes TCP/IP to communicate across a network. Enter the local IP address of the sync server in this field.

3.2.2.3 'My Port Number' – The Default communication port is "1011". Consult with a network administrator to determine if a different port should be utilized.

3.2.2.4 **Add received images to the 'To Store' database** (optional) – Enabling this feature allows a sync server to store images received from a remote sync server to the local ToStoreDB, a special index that lists newly acquired images. This feature is useful if the sync server will be used to forward images received from one remote location on to another.

3.2.2.5 **Enable logging of communications** – Enable this feature to allow the software to create communication log files. Refer to Appendix C: XV Sync Communication Logs for detailed information.

- **Flush all log writes** – If enabled, all log entries will be written immediately to the log file, instead of being written in chunks. *With this option disabled, an application failure may prevent a complete log file from being generated.*
- **Verbose logging** – If enabled, log entries will include the maximum amount of logging information. This will significantly increase the size of log files, but is useful for troubleshooting. This option may impact application performance.

3.2.2.6 **Enable Master log of connections** – Enable this feature to allow the software to create a master log of all connections to the sync server.

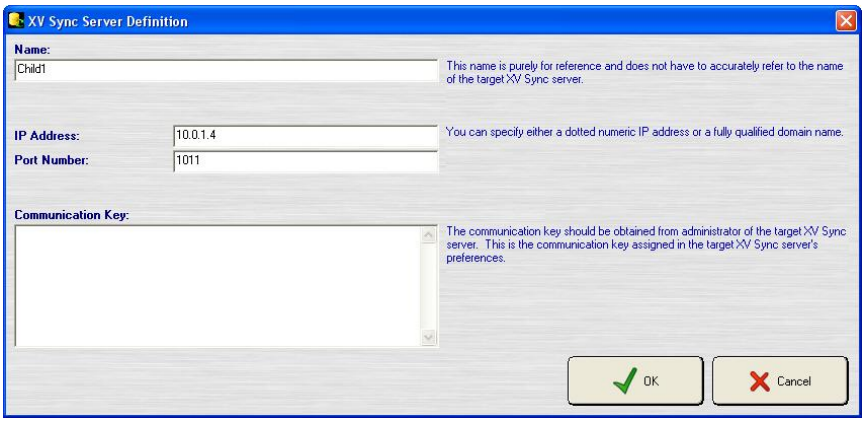
3.2.3 Click **OK** to save the changes made to the 'Image Reception Settings' screen.

3.3 Configuring Target Sync Servers in XV Sync

The sync server now needs to be enabled to connect to sync servers at remote locations.

3.3.1 From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization** > **Edit Target XV Sync Servers** to open the 'XV Sync Servers' screen.

3.3.2 Click on **Add Server**. The 'XV Sync Server Definition' screen displays.


XV Sync Server Definition
Name:
Child1
This name is purely for reference and does not have to accurately refer to the name of the target XV Sync server.
IP Address:
10.0.1.4
Port Number:
1011
You can specify either a dotted numeric IP address or a fully qualified domain name.
Communication Key:
The communication key should be obtained from administrator of the target XV Sync server. This is the communication key assigned in the target XV Sync server's preferences.
OK
Cancel

3.3.3 Complete the following fields:

3.3.3.1 'Name' – Enter a name to identify the remote sync server.

3.3.3.2 'IP Address' – XV Sync utilizes TCP/IP to communicate across a network. Enter the IP address or the domain name (computer name) of the remote sync server.

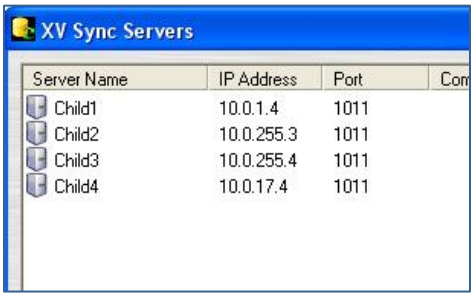
3.3.3.3 'Port Number' – The Default communication port is "1011". Consult with a network administrator at the remote location to determine if a different port should be utilized.

3.3.3.4 'Communication Key' (Optional) – If the remote sync server is configured to allow only connections using a unique communication key, the key must be obtained from the location's administrator and entered in the text box provided. *This field is case-sensitive and must be entered exactly as it is on the remote sync server's 'XV Sync Options' screen.*

3.3.3.5 Click **OK** to save the changes.

3.3.4 Repeat Step 3.3.2 and 3.3.3 above to add additional sync servers.

3.3.5 When complete, the remote sync servers will be listed on the screen.



3.3.6 Click **OK** to return to the main XV Sync screen.

4 GETTING STARTED WITH XV SYNC

4.1 Getting Started: Overview

This section describes the steps needed to prepare an organization that is implementing XV Sync and all sync servers and related patient databases to a "ready" state before initiating synchronization schedules to forward & retrieve patient images on desired days/times.

An initial synchronization is only necessary if the organization requires equivalent XrayVision® patient databases at all their sync server locations.

4.2 Manually Establishing Equivalent Patient Databases (Optional)

If an organization requires equivalent patient databases at all sync server locations, Apteryx, Inc. recommends performing an on-demand, manual synchronization before subsequent automated synchronizations are scheduled in the software.

The synchronization should be initiated from one sync server (e.g. the sync server at a CBO) that has all the remote locations configured as target sync servers.

Warning: The best approach to manually synchronizing the patient databases depends on the number of sync servers and size of each patient database in the implementation. It may be more practical to copy/deliver a composite database to sync server locations on hard disk (DVD, external HD, etc.) rather than performing a remote sync.

4.2.1 Manually Synchronizing Two (2) Sync Server Locations:

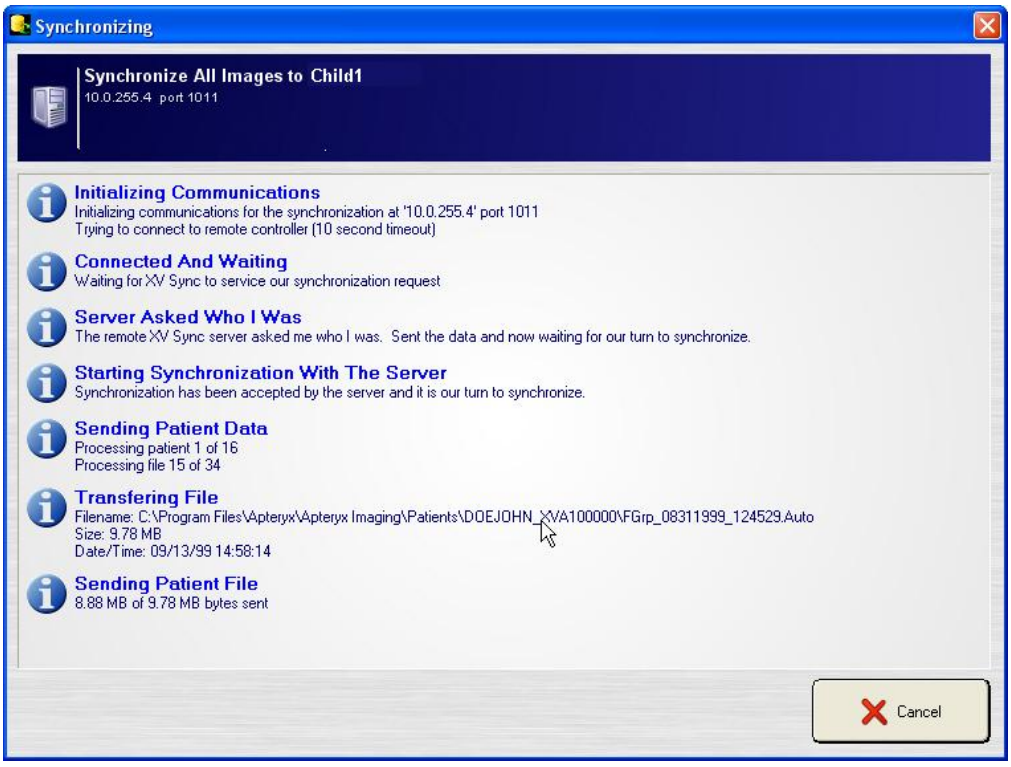
4.2.1.1 From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization** > **Synchronize Now**. The 'Synchronize Now' dialog box displays.

Synchronize Now
Synchronize with which server?
Child1
10.0.255.4 (port 1011)
What type of synchronization should be done?
Synchronization All Images
Update successfully transfered files status
This option only applies to the local ToStore database during successful Forward and Synchronization operations.
OK
Cancel

4.2.1.2 Select the remote sync server to be targeted from the 'Synchronize with which server' drop-down field.

4.2.1.3 Click on the 'What type of synchronization should be done' drop-down arrow and select **Synchronization All Images**.

4.2.1.4 Click on **OK** to initiate the synchronization. A status window displays the progress of the synchronization.


Synchronizing
Synchronize All Images to Child1
10.0.255.4 port 1011
Initializing Communications
Initializing communications for the synchronization at '10.0.255.4' port 1011
Trying to connect to remote controller (10 second timeout)
Connected And Waiting
Waiting for XV Sync to service our synchronization request
Server Asked Who I Was
The remote XV Sync server asked me who I was. Sent the data and now waiting for our turn to synchronize.
Starting Synchronization With The Server
Synchronization has been accepted by the server and it is our turn to synchronize.
Sending Patient Data
Processing patient 1 of 16
Processing file 15 of 34
Transfering File
Filename: C:\Program Files\Apteryx\Apteryx Imaging\Patients\DOEJOHN_XVA100000\FGrp_08311999_124529.Auto
Size: 9.78 MB
Date/Time: 09/13/99 14:58:14
Sending Patient File
8.88 MB of 9.78 MB bytes sent
Cancel

4.2.1.5 When complete repeat Steps 2-4 above for the additional sync servers listed.

4.2.2 Manually Synchronizing Three (3) or More Sync Server Locations:

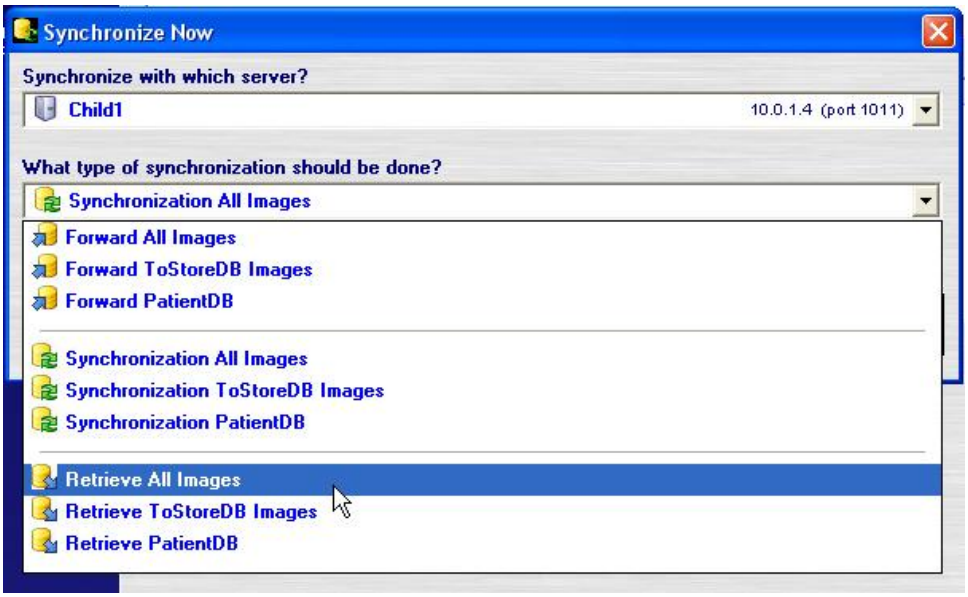
Apteryx, Inc. recommends manually initiating 'retrieve from' actions to build a composite database of all sites on one sync server. Subsequent 'forward to' actions manually initiated from the master sync server will send the composite database to each sync server location.

4.2.2.1 From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization** > **Synchronize Now**. The 'Synchronize Now' dialog box displays.

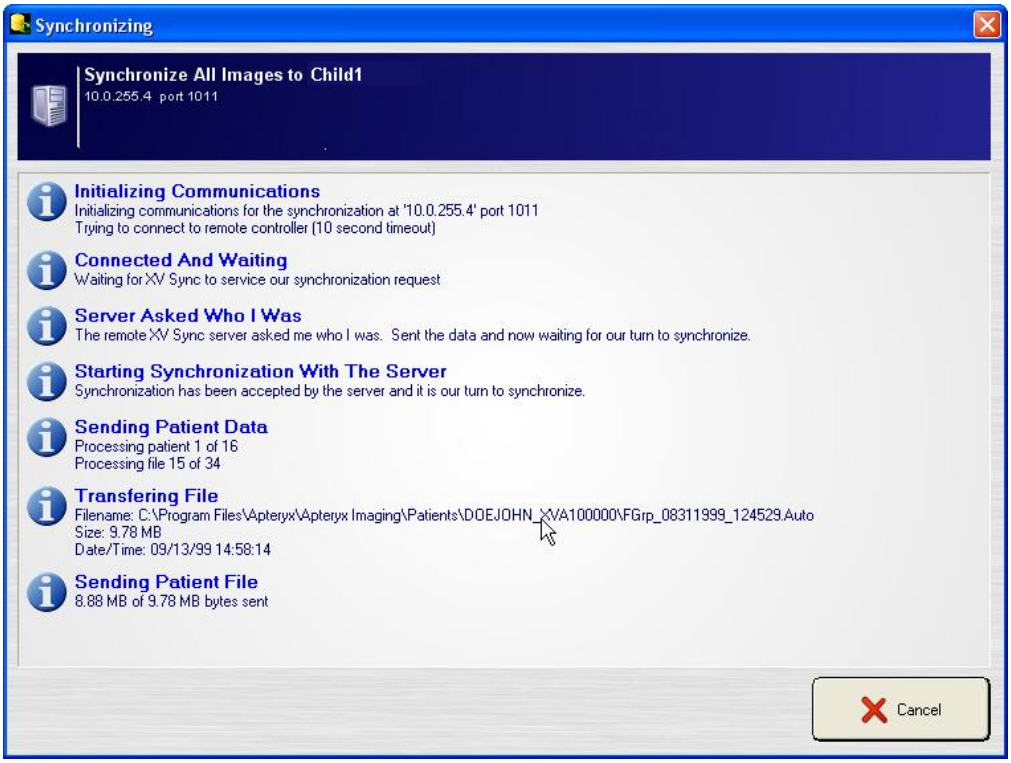
Synchronize Now
Synchronize with which server?
Child1
10.0.255.4 (port 1011)
What type of synchronization should be done?
Synchronization All Images
Update successfully transfered files status
This option only applies to the local ToStore database during successful Forward and Synchronization operations.
OK
Cancel

4.2.2.2 Select the remote sync server to be targeted from the 'Synchronize with which server' drop-down field.

4.2.2.3 Click on the 'What type of synchronization should be done' drop-down arrow and select **Retrieve All Images**.

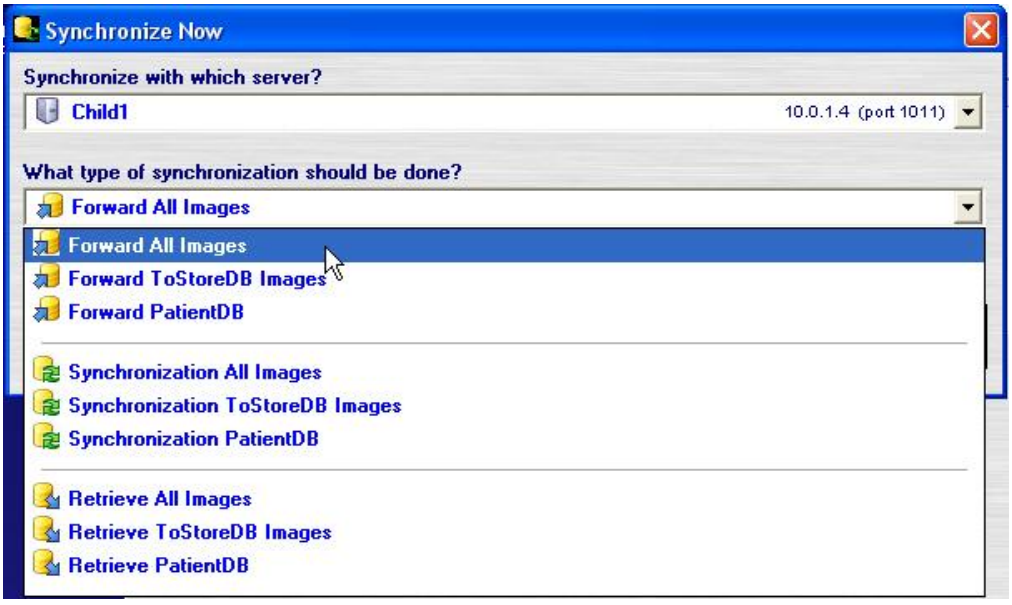


4.2.2.4 Click on **OK** to initiate the synchronization. A status window displays the progress of the synchronization.


Synchronizing
Synchronize All Images to Child1
10.0.255.4 port 1011
Initializing Communications
Initializing communications for the synchronization at '10.0.255.4' port 1011
Trying to connect to remote controller (10 second timeout)
Connected And Waiting
Waiting for XV Sync to service our synchronization request
Server Asked Who I Was
The remote XV Sync server asked me who I was. Sent the data and now waiting for our turn to synchronize.
Starting Synchronization With The Server
Synchronization has been accepted by the server and it is our turn to synchronize.
Sending Patient Data
Processing patient 1 of 16
Processing file 15 of 34
Transfering File
Filename: C:\Program Files\Apteryx\Apteryx Imaging\Patients\DOEJOHN_XVA100000\FGrp_08311999_124529.Auto
Size: 9.78 MB
Date/Time: 09/13/99 14:58:14
Sending Patient File
8.88 MB of 9.78 MB bytes sent
Cancel

4.2.2.5 When complete repeat Steps 2-4 above for the additional sync servers listed. When done, a composite of all database will exist on the local sync server.

4.2.2.6 Repeat Steps 2-5, except this time select **Forward all Images** to send the local, composite database to each remote sync server location. When done, the composite database will exist at every location.



4.2.2.7 Click **OK** when complete to exit back to the main screen.

4.3 Enabling the 'To Store' Database in XrayVision®

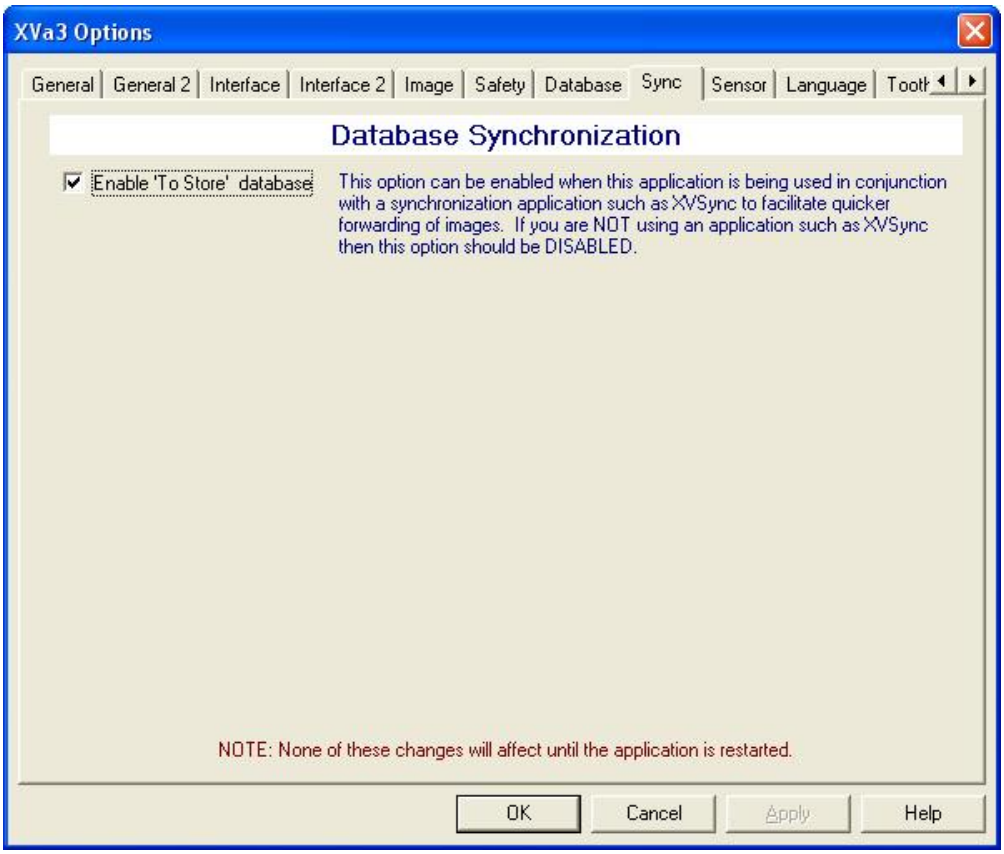
The 'To Store' database feature in XrayVision®, when enabled, automatically adds all newly acquired images to an index called the 'ToStoreDB'. The ToStoreDB adds efficiency to the synchronization process by avoiding the need to query the entire patient database on each sync server to determine which images are new.

Warning: Software settings are specific to each workstation; therefore, perform the steps below on all capture stations at each location that runs XrayVision®. This will assure all newly acquired images are added to the location's ToStoreDB.

4.3.1 Launch XrayVision™.

4.3.2 From the menu select *Tools* > *Options* to open the 'XV Options' dialog box.

4.3.3 Select the 'Sync' tab and click on **Enable 'To Store' database**.


XVa3 Options
General
General 2
Interface
Interface 2
Image
Safety
Database
Sync
Sensor
Language
Tooth
Database Synchronization
Enable 'To Store' database
This option can be enabled when this application is being used in conjunction with a synchronization application such as XVSync to facilitate quicker forwarding of images. If you are NOT using an application such as XVSync then this option should be DISABLED.
NOTE: None of these changes will affect until the application is restarted.
OK
Cancel
Apply
Help

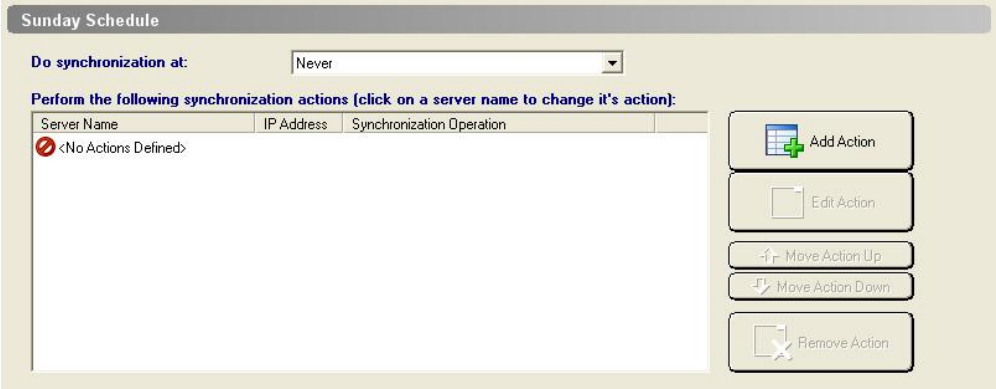
4.3.4 Click **OK** to save the changes.

4.4 Configuring Synchronization Schedules

Although periodic synchronization schedules can be created in XV Sync, Apteryx, Inc. recommends creating schedules to initiate synchronizations on specific days of the week and time of day when WAN bandwidth is optimal.

4.4.1 From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization** > **Edit Synchronization Schedule** to open 'XV Sync Schedule' screen.

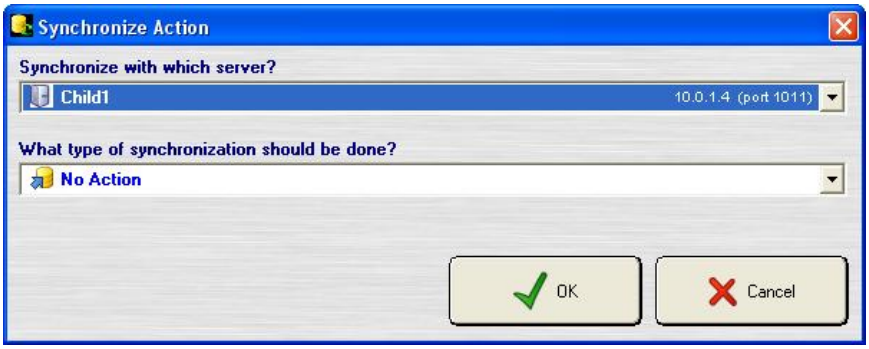
4.4.2 Scroll down to the scheduling section for the desired day.



4.4.3 To create a sync schedule, complete the following fields:

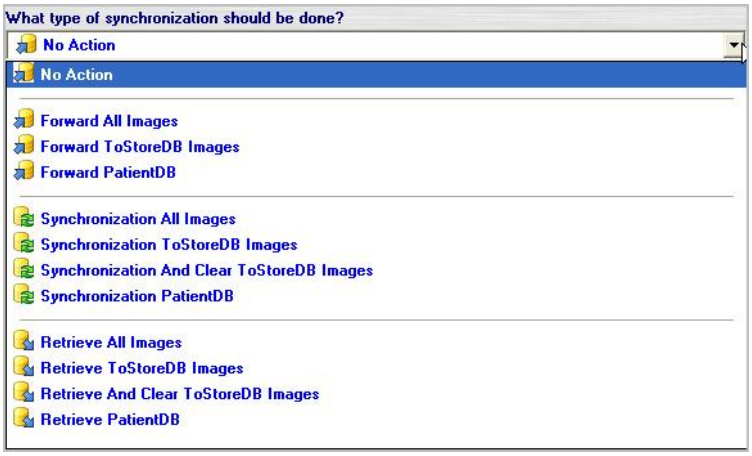
4.4.3.1 'Do synchronization at' - Select the desired synchronization time for the specific day.

4.4.3.2 'Perform the following synchronization actions' – Select **Add Action** to open the 'Synchronize Action' dialog box.



4.4.3.3 Complete the following to create a synchronization action:

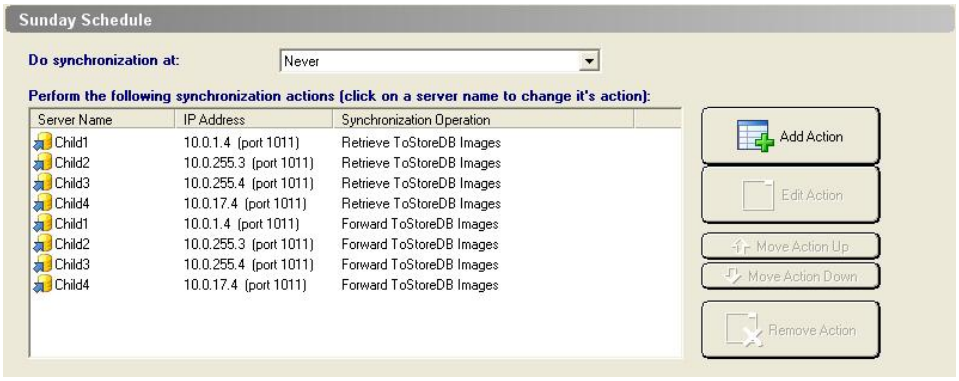
- 'Synchronize with which server' - Select the name of the remote sync server (e.g. 'Child1') to be targeted.
- 'What type of synchronization should be done' –



Select the appropriate synchronization operation. The selection made depends on the goal of the organization's XV Sync implementation. Refer to Appendix B: Synchronization Operations & Options for detailed information on each option.

4.4.3.4 Click **OK** to save the changes and return to the sync schedule.

4.4.3.5 Repeat Step 4.4.3.2 - 4.4.3.3 above to add actions for any additional sync server. When complete, the schedule will display a sync operation for each remote sync server.


Sunday Schedule
Do synchronization at:
Never
Perform the following synchronization actions (click on a server name to change it's action):
Server Name
IP Address
Synchronization Operation
Child1 10.0.1.4 (port 1011) Retrieve ToStoreDB Images
Child2 10.0.255.3 (port 1011) Retrieve ToStoreDB Images
Child3 10.0.255.4 (port 1011) Retrieve ToStoreDB Images
Child4 10.0.17.4 (port 1011) Retrieve ToStoreDB Images
Child1 10.0.1.4 (port 1011) Forward ToStoreDB Images
Child2 10.0.255.3 (port 1011) Forward ToStoreDB Images
Child3 10.0.255.4 (port 1011) Forward ToStoreDB Images
Child4 10.0.17.4 (port 1011) Forward ToStoreDB Images
Add Action
Edit Action
Move Action Up
Move Action Down
Remove Action

Sync operations will initiate at the specified time and in the order listed on the schedule.

4.4.4 Repeat Step 4.4.2 – 4.4.3 to schedule synchronizations for each day desired.

4.4.5 Click on **OK** to save changes and return to the main screen.

4.5 Setting up XV Sync ™ to run with Apteryx Servicer

In order for synchronizations to occur, the XV Sync process must be running on the sync servers. XV Sync can be added to Windows Startup folder; however, this does not assure that the application will be running. For example, if a user logs out of Windows the application will be ended and sync servers will be unable to connect.

Apteryx Servicer has the ability to assure applications that always need to be running are kept "alive" as a Windows Service, rather than relying on the Startup option. It also has the ability to periodically check that targeted applications are running and restart them if they are closed unexpectedly.

Follow the instructions below to install Apteryx Servicer and to add XV Sync as a targeted application to keep alive.

Apteryx Servicer cannot effectively launch XV Sync if XV Sync is in trial mode. If it attempts to launch XV Sync while it is in trial mode, the application will display the 'Trial Version Licensing Information' screen and wait on a user to click **I Agree** to continue launching the software. No scheduled synchronizations can occur until the software is fully launched. Refer to Registering XV Sync on the Server to register XV Sync for instructions if needed.

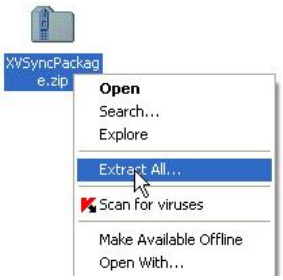
4.5.1 Installing Apteryx Servicer

Recall that the XV Sync Installer program was provided electronically in a compressed ZIP file either called:

- XVSyncPackage.zip, or
- XV_Sync_and_Apteryx_Servicer.zip

The zip file additionally includes the Apteryx Servicer installer program.

4.5.1.1 Right-click on the zip file and select *Extract All*.

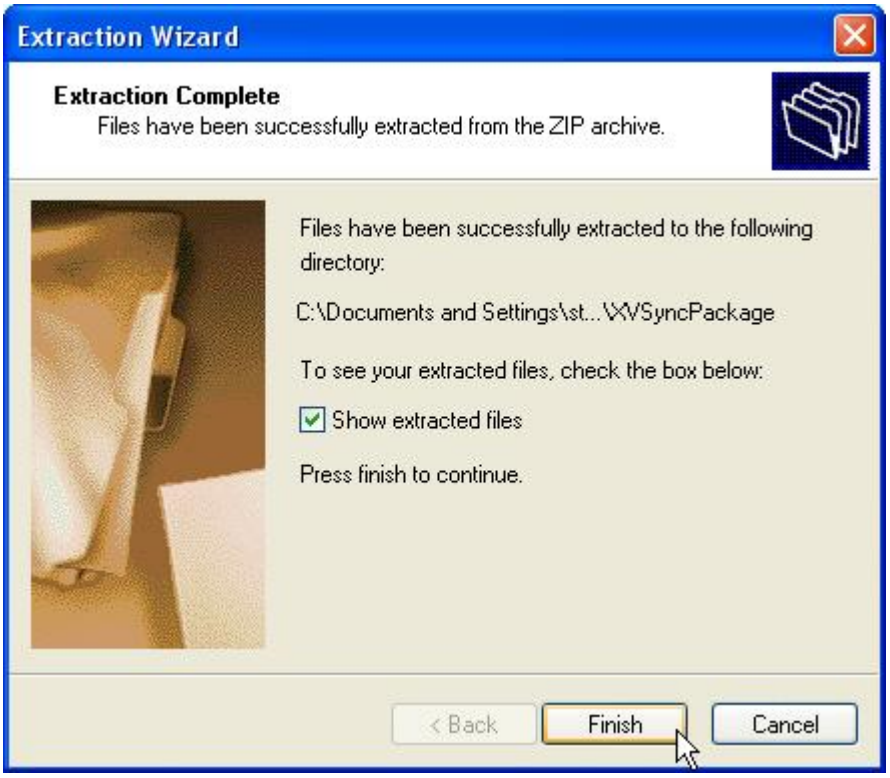


4.5.1.2 The Windows Extraction Wizard will launch. Click **Next** to continue with the extraction process.

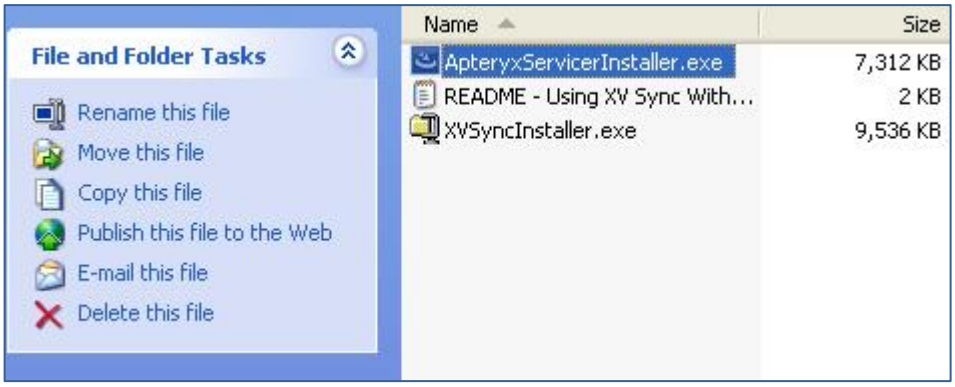
Extraction Wizard
Welcome to the Compressed (zipped) Folders Extraction Wizard
The extraction wizard helps you copy files from inside a ZIP archive.
To continue, click Next.
< Back
Next >
Cancel

4.5.1.3 Make note of the directory that the compressed files will be extracted to. Click **Next** to continue.

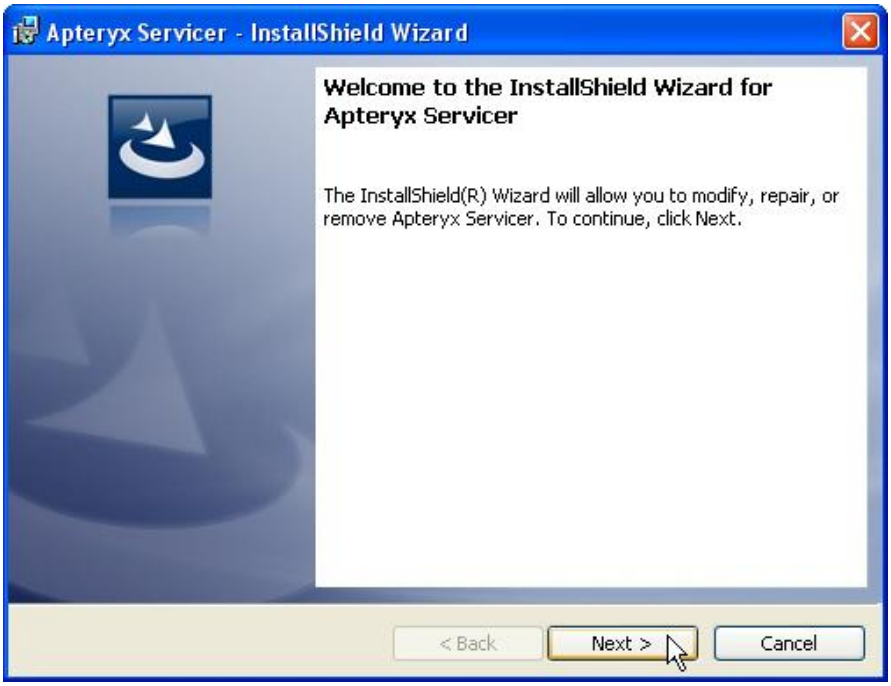
4.5.1.4 The files will be extracted to the specified directory when the extraction completes. Select **Finish** to exit the wizard


Extraction Wizard
Extraction Complete
Files have been successfully extracted from the ZIP archive.
Files have been successfully extracted to the following directory:
C:\Documents and Settings\st...\XVSyncPackage
To see your extracted files, check the box below:
Show extracted files
Press finish to continue.
< Back
Finish
Cancel

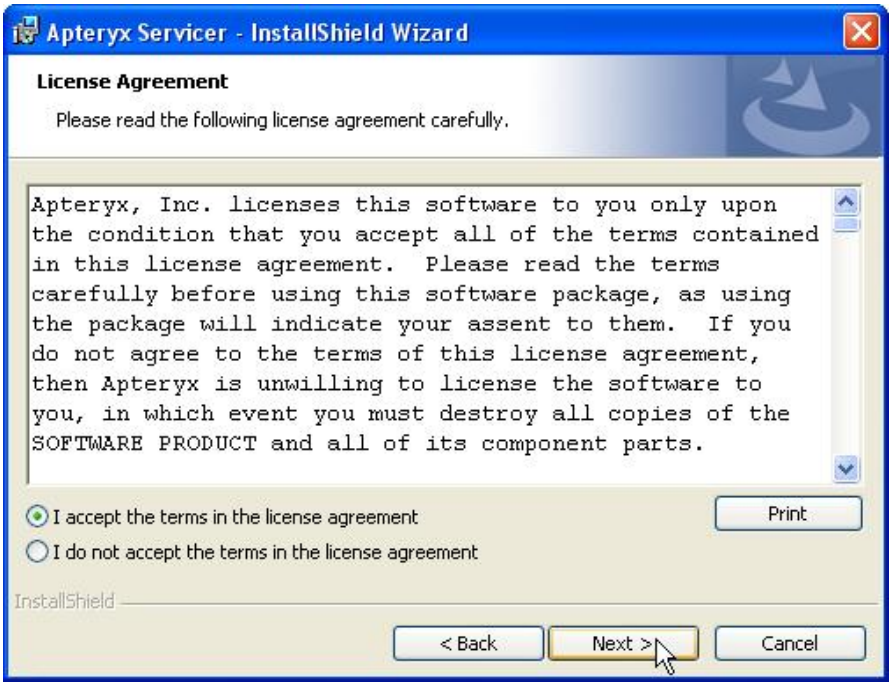
4.5.1.5 The extracted files will display in Windows Explorer. Double-click on **ApteryxServicerInstaller.exe** to begin the install process.



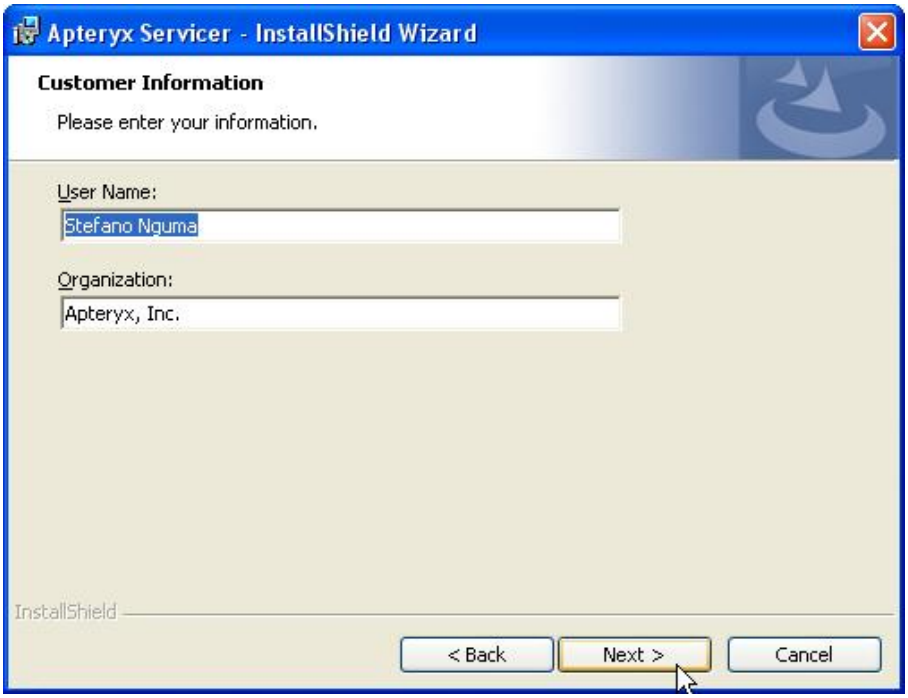
4.5.1.6 The Apteryx Servicer Install Wizard initializes and the welcome screen displays. Click **Next** to continue.


Apteryx Servicer - InstallShield Wizard
Welcome to the InstallShield Wizard for Apteryx Servicer
The InstallShield(R) Wizard will allow you to modify, repair, or remove Apteryx Servicer. To continue, click Next.
< Back
Next >
Cancel

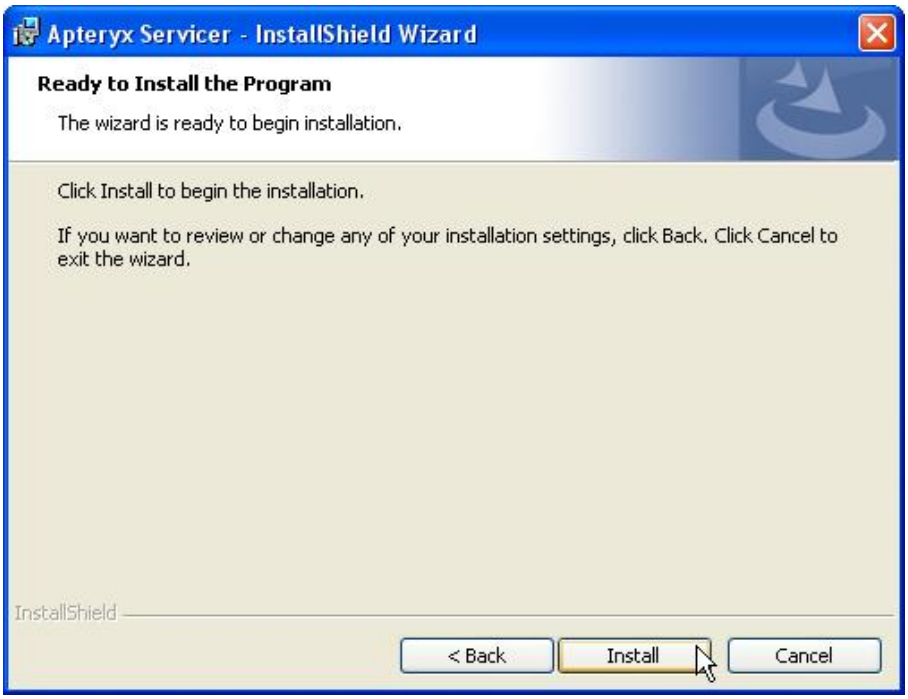
4.5.1.7 The License Agreement displays. Read and accept the terms of the license agreement and click **Next** to continue.


Apteryx Servicer - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Apteryx, Inc. licenses this software to you only upon the condition that you accept all of the terms contained in this license agreement. Please read the terms carefully before using this software package, as using the package will indicate your assent to them. If you do not agree to the terms of this license agreement, then Apteryx is unwilling to license the software to you, in which event you must destroy all copies of the SOFTWARE PRODUCT and all of its component parts.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

4.5.1.8 The customer information screen displays. Enter information in the 'User Name' and 'Organization' fields. Click **Next** to continue.



4.5.1.9 Click **Install** to continue with the installation.


Apteryx Servicer - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

4.5.1.10 When the installation completes, click **Finish** to close the install wizard.

Apteryx Servicer - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Apteryx Servicer. Click Finish to exit the wizard.
< Back
Finish
Cancel

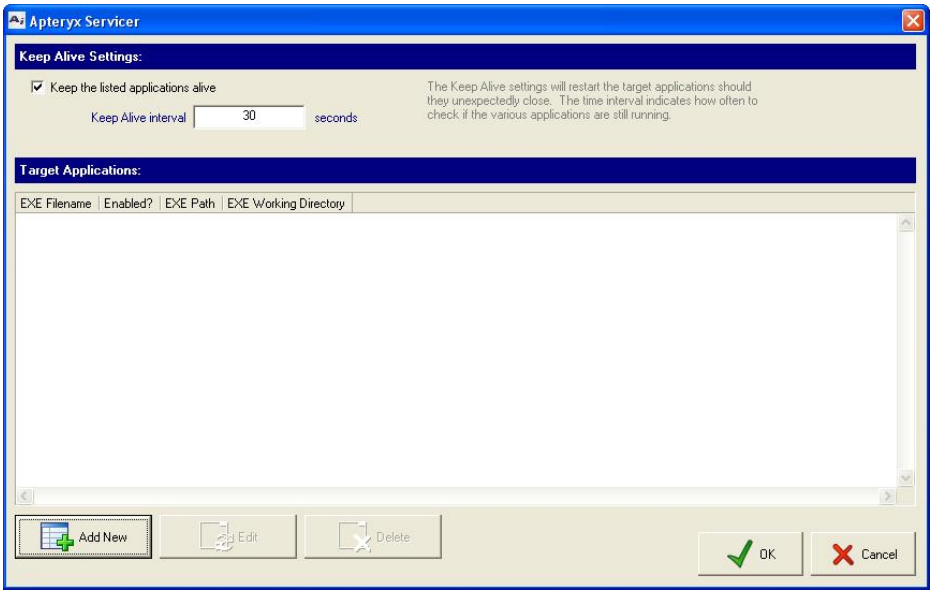
4.5.2 Adding XV Sync to the "Keep Alive" List

Follow the steps below to add XV Sync to Apteryx Servicer's list of "Keep Alive" applications:

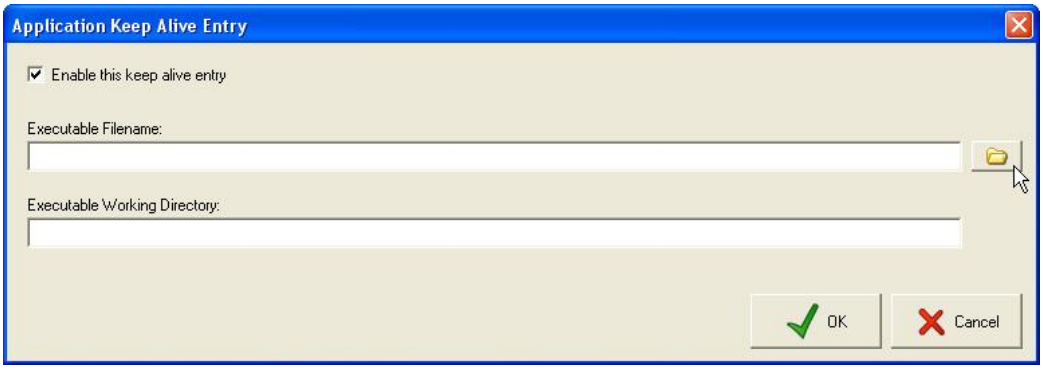
4.5.2.1 From the Windows ***Start*** menu, select ***Control Panel***.

Apteryx Servicer cannot be accessed via the Control Panel if the default 'Category View' is enabled. If it is, switch to the standard view by selecting the link, Switch to Classic View.

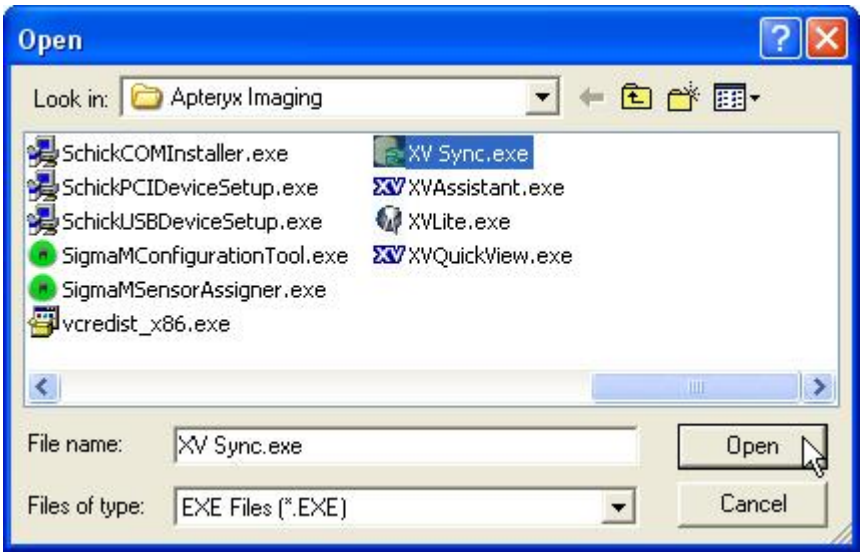
4.5.2.2 Double-Click on **Apteryx Servicer** to launch the application.



4.5.2.3 At the bottom-left, double-click on **Add New**. The 'Application Keep Alive Entry' dialog box displays.

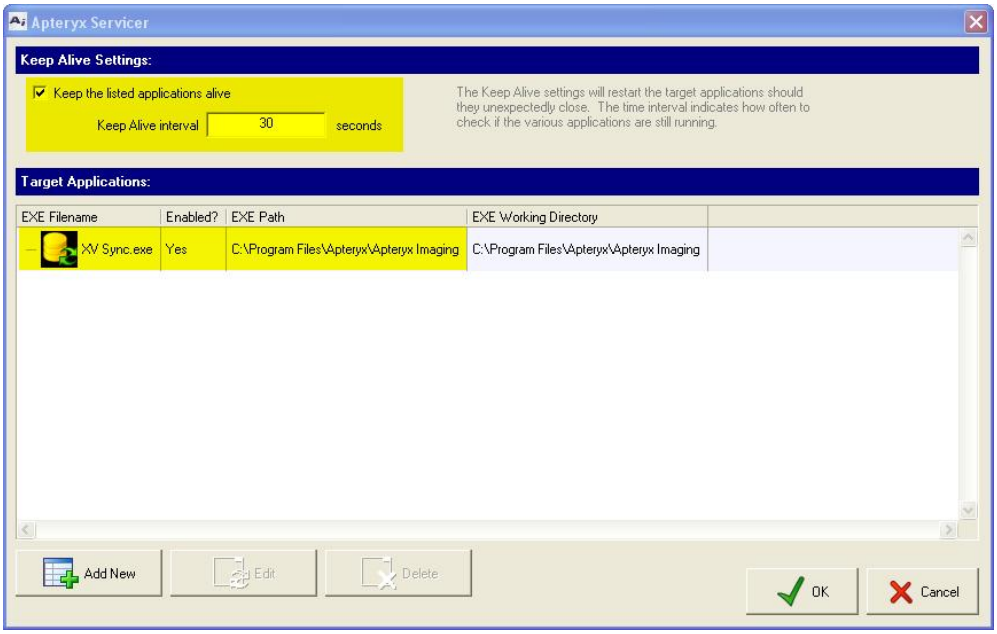


4.5.2.4 Select the browse icon ( ) to the right of the 'Executable Filename' field. Locate the XV Sync.exe executable file. Once selected, click on **Open** to add the application.



4.5.2.5 Select **Enable this keep alive entry** and then click on OK to exit the 'Application Keep Alive Entry' dialog box.

4.5.2.6 XV Sync.exe is now listed as a Target Application. Ensure that the **Keep the listed applications alive** setting is enabled. Adjust the interval as desired.



4.5.2.7 Click **OK** to exit Apteryx Servicer. XV Sync will now run as a Windows Service and Apteryx Servicer will ensure that the application is always running, ready to communicate with other sync servers.

5 XV SYNC TOOLS AND UTILITIES

5.1 Tools and Utilities: Overview

XV Sync includes reconciliation tools and utilities that give administrators the ability to create reconciliation log files used to check for differences between patient databases on sync servers. The utilities are useful in determining if all patient files transferred correctly to a remote sync server.

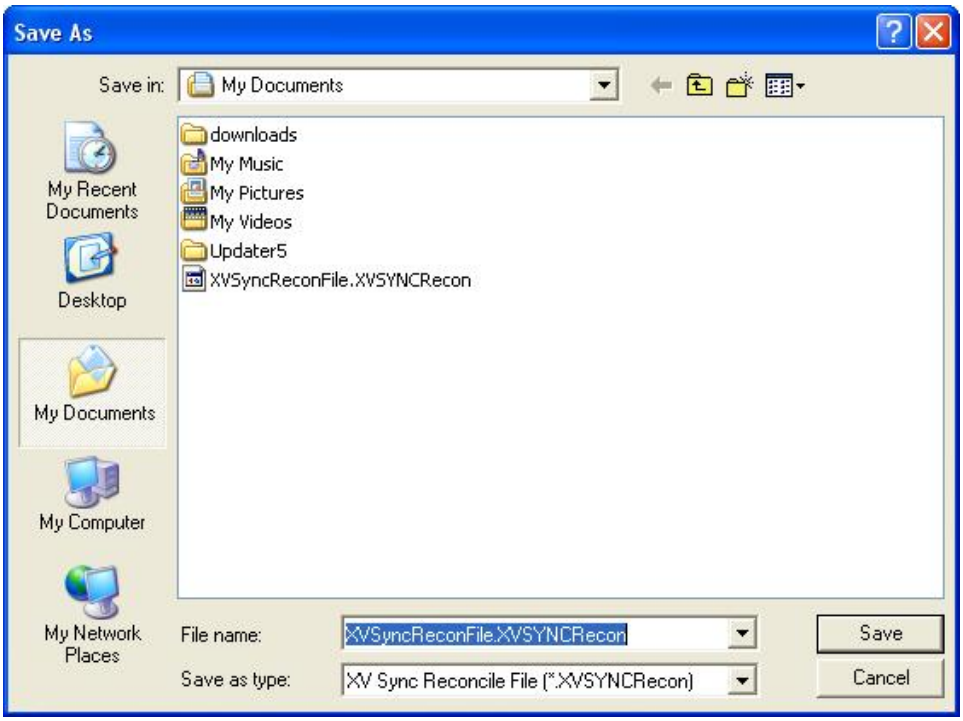
Additionally, XV Sync includes a utility that administrators can use to view current patient records or add additional records to the ToStoreDB.

5.2 Create a Reconciliation File

A reconciliation file provides an administrator the ability to check the patient database on their sync server against a database on a remote sync server. An administrator from one location can provide a reconciliation file to another sync server location in order for them to run and check against their database. Checking the reconciliation file provides a line-by-line, detailed report on each patient record that failed to transfer from the originating sync server.

To create a reconciliation file:

5.2.1 Select ***Tools And Utilities > Reconciliation Options > Create A Reconciliation File***. A 'Save As' dialog box pops up.



5.2.2 Click on the 'Save in' drop-down to select a location to save the reconciliation file to.

5.2.3 Accept the default name, "XVSyncReconFile.XVSYNCRecon", or enter a new name in the 'File name' field.

5.2.4 Click on **Save** to create the reconciliation file in the specified location.

5.2.5 Provide the reconcile file generated to an administrator at a remote sync server location to check against their patient database.

Automate the 'create and send' reconcile file process by configuring Email Notifications in 'XV Sync Options' and using the Create And Email A Reconciliation File option as described below.

5.3 Create and Email a Reconciliation File

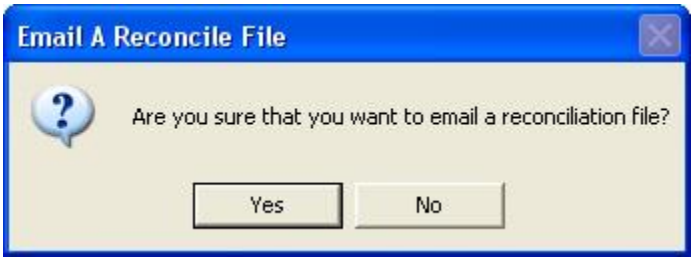
If Email Notifications are configured in XV Sync Preferences, an administrator can create and send a reconciliation file to one or more administrators on their mailing list in one step.

This option will not be available unless Email Notification is configured in 'XV Sync Options'. Refer to Appendix D: XV Sync Email Notifications for detailed information on configuring outgoing mail server (SMTP) settings and recipient list.

To create and email a reconcile file:

5.3.1 Select **Tools And Utilities > Reconciliation Options > Create and Email a Reconciliation File**.

5.3.2 A dialog box appears to confirm the requested action. Click **Yes** to continue.



5.3.3 The recipient(s) added to the Email Notification's Email Address List in XV Sync 'XV Sync Options' will then receive an email with a reconcile file attachment.

This function can be fully automated to email a reconciliation file to a remote sync server after every synchronization completes by enabling the **Automatically send reconcile files after a synchronization** in 'XV Sync Options'**.** Refer to Appendix D: Email Notifications for information.

5.4 Checking Reconciliation Files

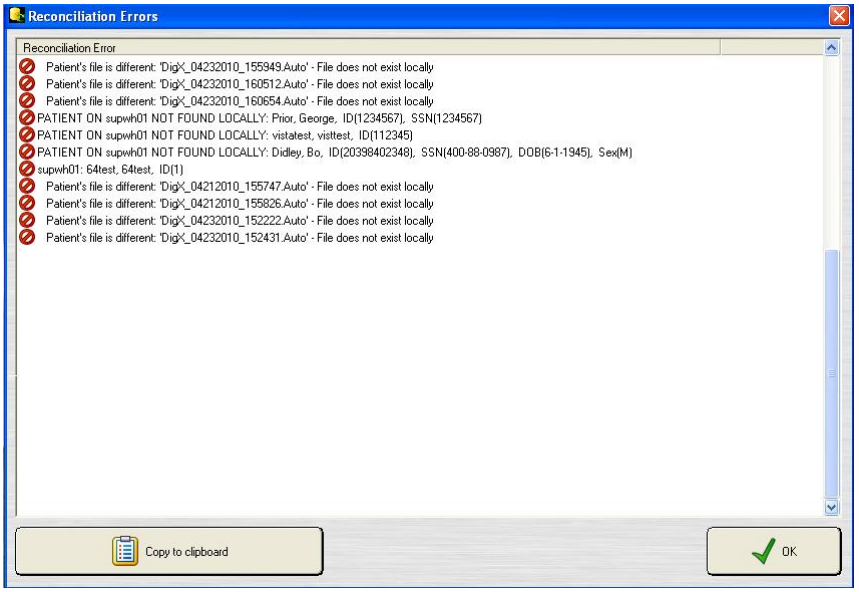
Checking a reconciliation file provides a line-by-line, detailed report on each patient record that failed to transfer from an originating sync server. An administrator can check one or more than one reconciliation file at a time.

5.4.1 Checking a Single Reconciliation File

5.4.1.1 Select ***Tools and Utilities > Reconciliation Options > Check a Reconciliation File***. The 'Open' dialog box displays.

5.4.1.2 Select the drop-down arrow to the right of the 'Look In' field to browse the computer/network and select the location where the reconciliation file was stored.

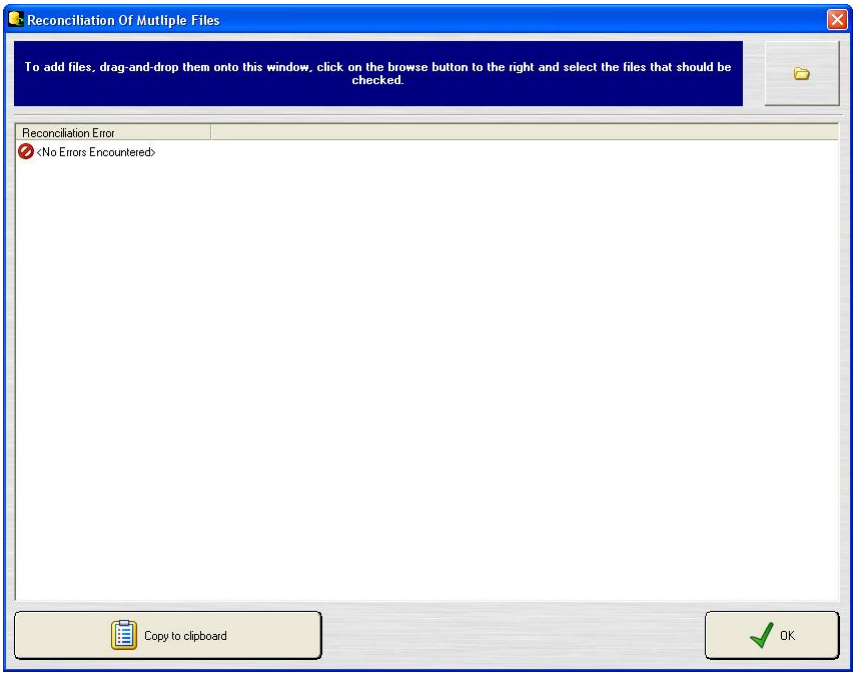
5.4.1.3 Double-click on the file to open it. Reconcile file errors will display in a viewer for the administrator to review.


Reconciliation Errors
Reconciliation Error
Patient's file is different: 'DigX_04232010_155949.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_160512.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_160654.Auto' - File does not exist locally
PATIENT ON supwh01 NOT FOUND LOCALLY: Prior, George, ID(1234567), SSN(1234567)
PATIENT ON supwh01 NOT FOUND LOCALLY: vistatest, visttest, ID(112345)
PATIENT ON supwh01 NOT FOUND LOCALLY: Didley, Bo, ID(20398402348), SSN(400-88-0987), DOB(6-1-1945), Sex(M)
supwh01: 64test, 64test, ID(1)
Patient's file is different: 'DigX_04212010_155747.Auto' - File does not exist locally
Patient's file is different: 'DigX_04212010_155826.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_152222.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_152431.Auto' - File does not exist locally
Copy to clipboard
OK

5.4.1.4 Click **OK** to close the viewer.

5.4.2 Checking Multiple Reconciliation Files:

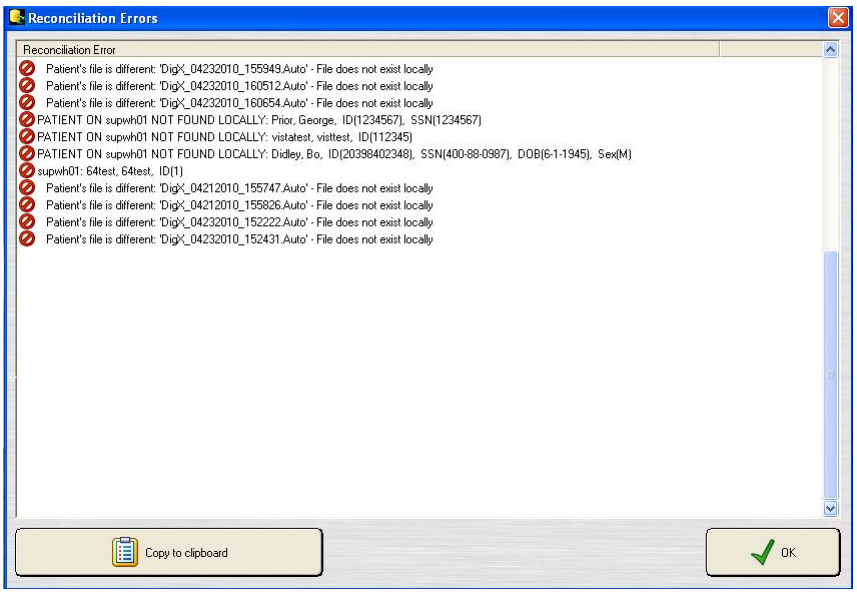
5.4.2.1 Select **Tools and Utilities > Reconciliation Options > Check Multiple Reconciliation Files**. The multiple file viewer displays.


Reconciliation Of Mutliple Files
To add files, drag-and-drop them onto this window, click on the browse button to the right and select the files that should be checked.
Reconciliation Error
<No Errors Encountered>
Copy to clipboard
OK

5.4.2.2 Add reconciliation files using one of the following options:

- "Drag-and-Drop" each reconciliation file from Windows Explorer, or
- Select the folder icon ( ) to browse out to the location of each file and add them to the viewer.

5.4.2.3 Reconciliation file errors will display as each file is added to the viewer.

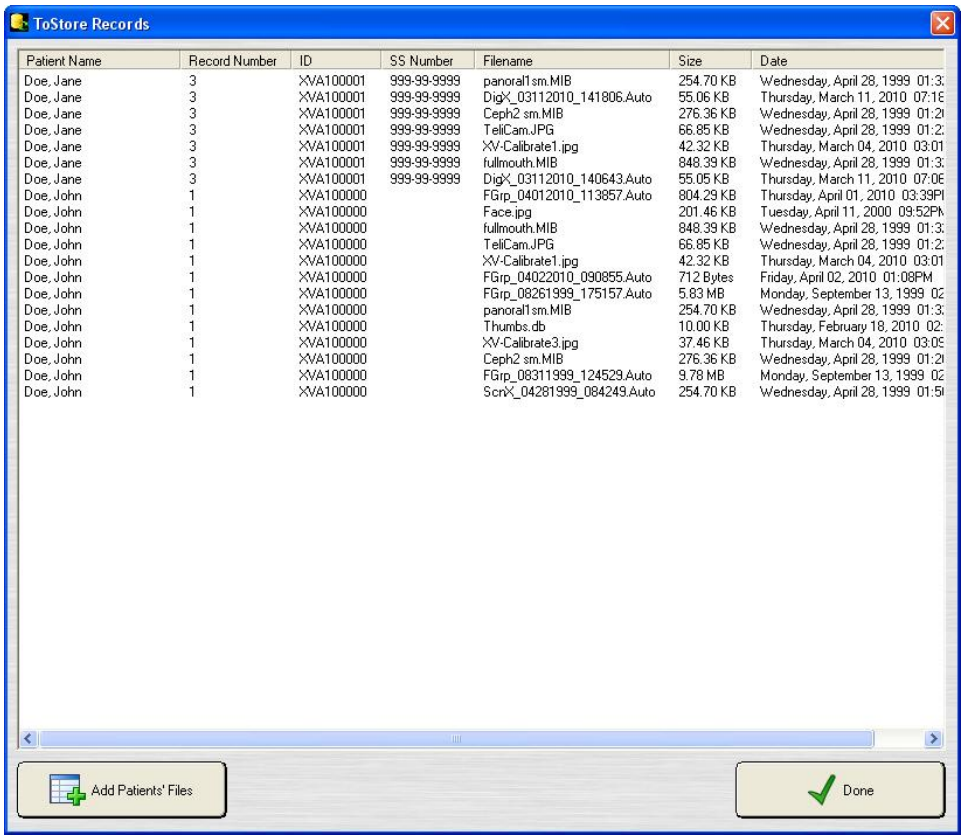

Reconciliation Errors
Reconciliation Error
Patient's file is different: 'DigX_04232010_155949.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_160512.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_160654.Auto' - File does not exist locally
PATIENT ON supwh01 NOT FOUND LOCALLY: Prior, George, ID(1234567), SSN(1234567)
PATIENT ON supwh01 NOT FOUND LOCALLY: vistatest, visttest, ID(112345)
PATIENT ON supwh01 NOT FOUND LOCALLY: Didley, Bo, ID(20398402348), SSN(400-88-0987), DOB(6-1-1945), Sex(M)
supwh01: 64test, 64test, ID(1)
Patient's file is different: 'DigX_04212010_155747.Auto' - File does not exist locally
Patient's file is different: 'DigX_04212010_155826.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_152222.Auto' - File does not exist locally
Patient's file is different: 'DigX_04232010_152431.Auto' - File does not exist locally
Copy to clipboard
OK

5.4.2.4 Click **OK** to close the viewer.

5.5 Displaying 'To Store' Database Records

The 'To Store' database feature in XrayVision®, when enabled, automatically adds all newly acquired images to a database called the 'ToStoreDB'.

To view ToStoreDB records, select **Tools and Utilities > Display ToStore Database**. The viewer launches to display records currently in the ToStoreDB.


ToStore Records
Patient Name | Record Number | ID | SS Number | Filename | Size | Date
Doe, Jane | 3 | XVA100001 | 999-99-9999 | panoral1sm.MIB | 254.70 KB | Wednesday, April 28, 1999 01:3
Doe, Jane | 3 | XVA100001 | 999-99-9999 | DigX_03112010_141806.Auto | 55.06 KB | Thursday, March 11, 2010 07:1
Doe, Jane | 3 | XVA100001 | 999-99-9999 | Ceph2 sm.MIB | 276.36 KB | Wednesday, April 28, 1999 01:2
Doe, Jane | 3 | XVA100001 | 999-99-9999 | TeliCam.JPG | 66.85 KB | Wednesday, April 28, 1999 01:2
Doe, Jane | 3 | XVA100001 | 999-99-9999 | XV-Calibrate1.jpg | 42.32 KB | Thursday, March 04, 2010 03:01
Doe, Jane | 3 | XVA100001 | 999-99-9999 | fullmouth.MIB | 848.39 KB | Wednesday, April 28, 1999 01:3
Doe, Jane | 3 | XVA100001 | 999-99-9999 | DigX_03112010_140643.Auto | 55.05 KB | Thursday, March 11, 2010 07:0
Doe, John | 1 | XVA100000 | | FGrp_04012010_113857.Auto | 804.29 KB | Thursday, April 01, 2010 03:39P
Doe, John | 1 | XVA100000 | | Face.jpg | 201.46 KB | Tuesday, April 11, 2000 09:52P
Doe, John | 1 | XVA100000 | | fullmouth.MIB | 848.39 KB | Wednesday, April 28, 1999 01:3
Doe, John | 1 | XVA100000 | | TeliCam.JPG | 66.85 KB | Wednesday, April 28, 1999 01:2
Doe, John | 1 | XVA100000 | | XV-Calibrate1.jpg | 42.32 KB | Thursday, March 04, 2010 03:01
Doe, John | 1 | XVA100000 | | FGrp_04022010_090855.Auto | 712 Bytes | Friday, April 02, 2010 01:08PM
Doe, John | 1 | XVA100000 | | FGrp_08261999_175157.Auto | 5.83 MB | Monday, September 13, 1999 02
Doe, John | 1 | XVA100000 | | panoral1sm.MIB | 254.70 KB | Wednesday, April 28, 1999 01:3
Doe, John | 1 | XVA100000 | | Thumbs.db | 10.00 KB | Thursday, February 18, 2010 02
Doe, John | 1 | XVA100000 | | XV-Calibrate3.jpg | 37.46 KB | Thursday, March 04, 2010 03:0
Doe, John | 1 | XVA100000 | | Ceph2 sm.MIB | 276.36 KB | Wednesday, April 28, 1999 01:2
Doe, John | 1 | XVA100000 | | FGrp_08311999_124529.Auto | 9.78 MB | Monday, September 13, 1999 02
Doe, John | 1 | XVA100000 | | ScnX_04281999_084249.Auto | 254.70 KB | Wednesday, April 28, 1999 01:5
Add Patients' Files
Done

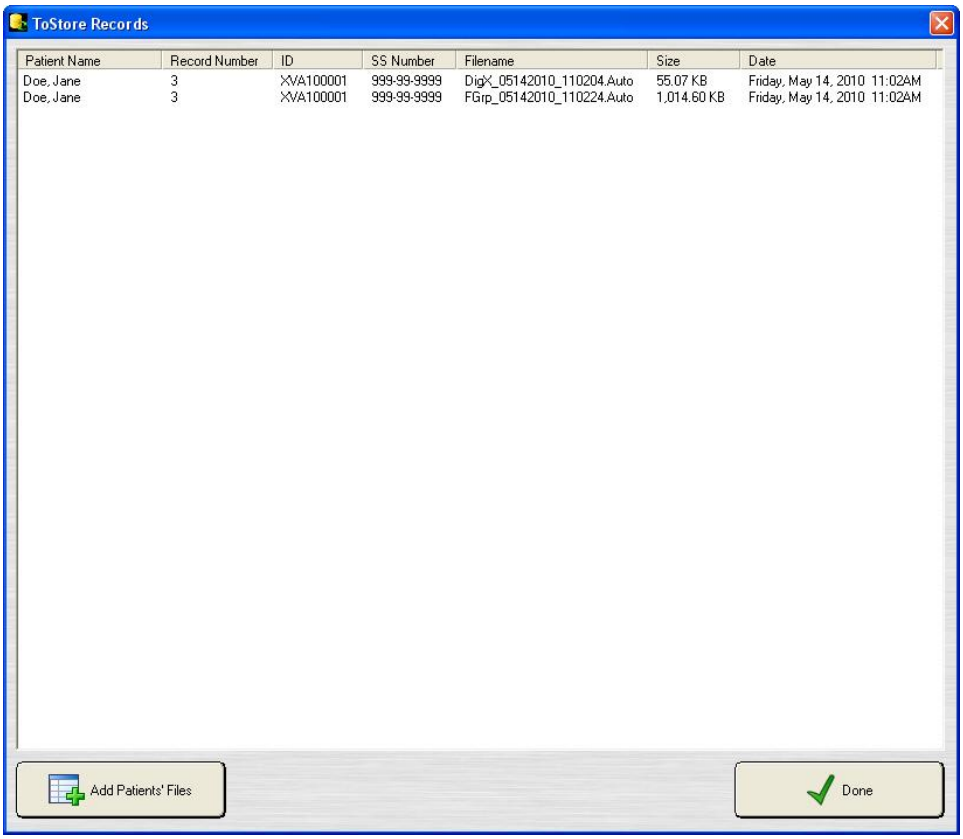
5.6 Adding Patient Files to the 'To Store' Database

The 'To Store' database (ToStoreDB) stores XrayVision® images acquired after the last ToStoreDB synchronization transferred and cleared the previous records. However, patient files can also be manually added from within XV Sync. This feature is useful in situations where a patient's images need to be quickly sent from one sync server to another on demand.

To add patient files to the ToStoreDB:

5.6.1 Select **Tools and Utilities > Display ToStore Database**. The viewer launches to display records currently in the ToStoreDB.

5.6.2 Select **Add Patients' Files** on the bottom left-hand corner. The 'Select Patients' dialog box displays with a list of patients in the local XrayVision® patient database.



5.6.2.1 To add all patient images, select **Check All**.

5.6.2.2 To add images captured within a specified date range, select **Check Date Range.** Enter a valid start and end date in the 'Specify Date Range' dialog box then click on **OK**.

5.6.3 When done, click on **OK** to exit the 'ToStore Records' viewer.

5.6.4 The ToStoreDB records will be transmitted when the next ToStoreDB synchronization is performed.

6 APPENDIX A: XV SYNC IMPLEMENTATION SCENARIOS

6.1 Implementing XV Sync: Overview

XV Sync enables the synchronization of remote Apteryx databases for a dental organization. Synchronization can be manually initiated or scheduled for weekly recurrence.

Administrator's can initiate actions to:

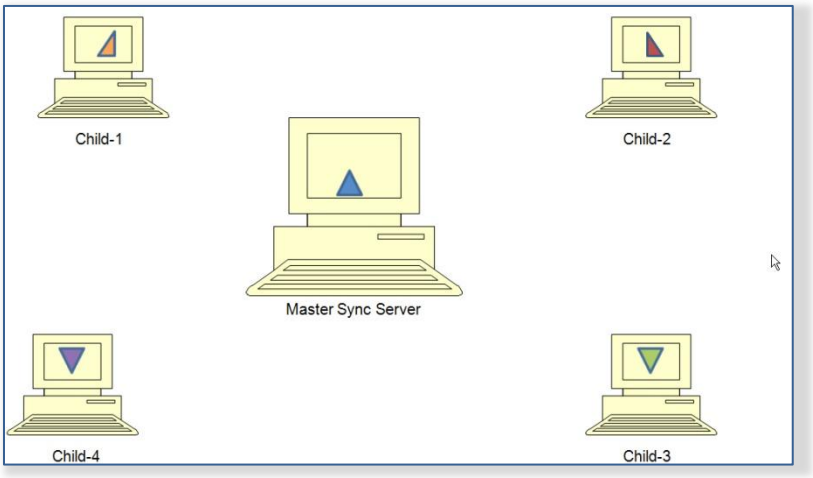
- Forward
- Retrieve
- Synchronize

Additionally, they can specify what to forward, retrieve, or synchronize:

- All patient images (all images)
- To Store Databases (ToStoreDB)
- Patient information only (PatientDB)

The ideal environment for an XV Sync implementation is an organization with a Central Business Office (CBO) and one or more remote locations.

In the following implementation scenarios:



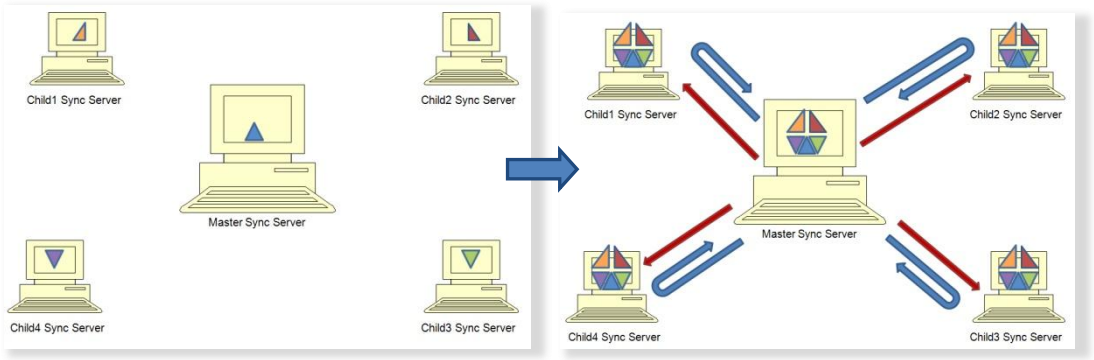
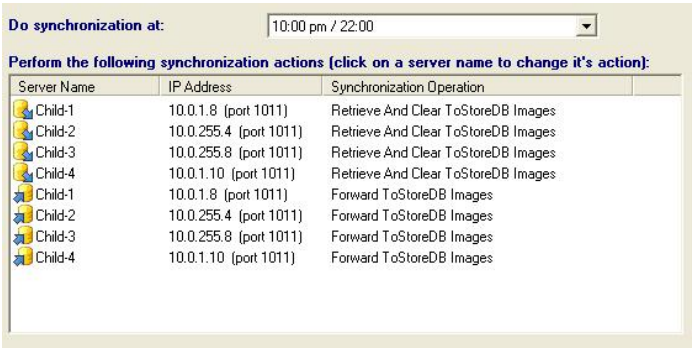
- One server (e.g. in a Central Business Office) is designated to schedule and initiate sync requests (hereafter referred to as a "Master Sync Server").
- The other server(s) (e.g. in a remote locations) are designated to receive sync requests (hereafter referred to as a "Child Sync Server").

The benefit of such an implementation is simplicity: managing schedules and general troubleshooting are simplified when one sync server initiates all synchronizations.

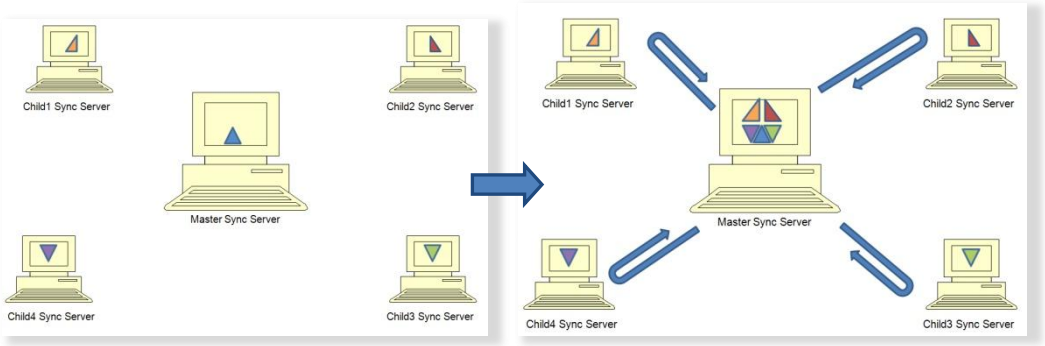
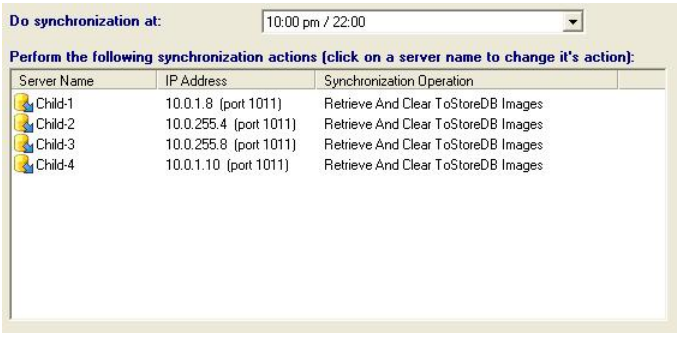
The two implementation scenarios presented below are for dental organizations that want to accomplish one of the following goals via XV Sync:

- Generate and maintain equivalent patient databases at both Master and Child sync server locations
- Generate and maintain a composite of all patient databases on Master Sync Server only

6.2 Scenario #1: Equivalent Databases on All Sync Servers

Action	Objective and Execution Method
	 **Overall Objective:** After scheduled synchronization completes, Master and Child Sync Server will be updated with new images that were captured at all locations.
A. Initial Sync[1] (manual, periodic, or scheduled)	**Objective:** Build a composite of all databases on each sync servers (master and children) **Execution Method:** Master Sync Server performs the following sync operation with each child: 1. **Retrieve All Images** 2. **Forward All Images**
B. Scheduled Syncs	**Objective:** Maintain composite databases on all sync servers, updating each with new images captured at all locations. **Execution Method:** Master Sync Server performs the following sync operation with each child: 1. **Retrieve and Clear ToStoreDB Images**. ***(Note: Add received images to the 'To Store' database*** *must be enabled on Master.)* 2. **Forward ToStoreDB Images**. Setup desired day-of-week schedules as shown below: 

6.3 Scenario #2: Composite Database on Master Sync Server Only

Action	Objective and Execution Method
	 **Overall Objective:** After scheduled synchronization completes, Master Sync Server will be updated with new images that were captured at all sync server locations.
A. Initial Sync[1] (manual, periodic, or scheduled)	**Objective:** Build a composite database with all images on Master Sync Server **Execution Method:** 1. Master Sync Server performs a **Retrieve all Images** from each child sync server.
B. Scheduled Syncs	**Objective:** Maintain composite databases on Master Sync Server only, updating it with new images captured at locations. **Execution Method:** 1. Master Sync Server performs a **Retrieve and Clear ToStoreDB Images** from each child. Setup desired day-of-week schedules as shown below: 

1. Consideration of total patient database sizes must be taken into account. It may be more practical to copy/deliver a composite database to sync server location on hard disk (DVD, external HD, etc.) rather than performing an initial sync.

7 APPENDIX B: SYCHRONIZATION OPERATIONS & OPTIONS

7.1 Overview

XV Sync provides multiple methods for synchronizing databases. Administrators can choose to:

- Synchronize on-demand with one remote sync server using the **Synchronize Now** option

Synchronize Now
Enables you to select a remote server to synchronize your images without having to wait for the synchronization schedule.

- Create schedules to synchronize with one or more remote sync servers periodically or on specific day/time of the week using the **Edit Synchronization Schedule** option.

Edit Synchronization Schedule
Enables you to edit schedule of how images are forwarded and synchronized with target XV Sync servers.

Whether on-demand or scheduled, administrators can initiate sync operations to:

- Forward
- Synchronize
- Retrieve

Additionally, they can specify what to forward, synchronize, or retrieve:

- All patient images (… All images)
- To Store Databases (… ToStoreDB)
- Patient information only (… PatientDB)

The following section describes these operations in more detail.

Warning - Deleting or Merging Patients: XV Sync is a system designed to maintain data integrity between XV Sync locations. It does not synchronize the removal of images or patient records, performed in one location, at other sites in the XV Sync implementation. If a patient image or record removed in one location exists in a remote site, it will be restored after synchronization completes. Actions such a deleting a patient record, removing images, or merging patient records will need to be coordinated across all sites. Site administrators will need to stop XV Sync from running and perform the deletion or merge tasks in all databases at all locations. Refer to Important Patient Database Considerations for detailed information.

7.2 Forward, Synchronize, or Retrieve All Patient Images

All images in a patient database can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:

Warning: The operations below will transfer every single image in a patient database across the network, regardless of whether or not the image already exists in the receiving database. Consideration of total patient database size and network bandwidth must be taken into account.

- **Forward All Images** will send all patient images from an initiating sync server to a targeted, remote sync server.
- **Synchronization All Images** will send all patient images to a targeted remote sync server. It will also retrieve all patient images from the targeted sync. When the operation is complete, the patient databases residing on each sync server will be equivalent.
- **Retrieve All Images** will target a remote sync server and pull all patient images, storing them locally.

7.3 Forward, Synchronize, or Retrieve ToStoreDB Images

The 'To Store' database feature in XrayVision, when enabled, automatically adds all newly acquired images to an index called the 'ToStoreDB'. The ToStoreDB adds efficiency to a synchronization process by avoiding the need to query an entire patient database on a targeted remote sync server to determine which images are new.

All images listed in a ToStoreDB can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:

- **Forward ToStoreDB Images** will send all patient images listed in the ToStoreDB from an initiating sync server to a targeted, remote sync server. If a scheduled synchronization is performed, the ToStoreDB is cleared on the initiating sync server when the operation completes.
- **Synchronization ToStoreDB Images** will send all patient images listed in the ToStoreDB to the targeted sync server. It will also retrieve ToStoreDB records from the targeted sync server and store them locally. If a scheduled synchronization is performed, the ToStoreDB is cleared on the initiating sync server when the operation completes.
- **Synchronization and Clear ToStoreDB Images** performs the same operation as the option above. Additionally, the ToStoreDB index will be cleared on the targeted, remote sync server.
- **Retrieve ToStoreDB Images** will target and pull all records from a remote sync server's ToStoreDB.
- **Retrieve and Clear ToStoreDB Images** performs the same operation as the option above. Additionally, the ToStoreDB index will be cleared on the targeted, remote sync server.

7.4 Forward, Synchronize, or Retrieve PatientDB

Some dental organizations manage all their local and remote patients from a central business office (CBO). Although the new patient record is created at the CBO, a patient may be scheduled to visit a remote location for dental x-rays.

The 'PatientDB' sync operations are designed to query and transmit only patient records and associated patient information (SS#, ID, gender, DOB, etc.) between sync servers. No images are transmitted in 'PatientDB' sync processes. If a record does not exist at the targeted sync server location, a patient file will be created in the patient database.

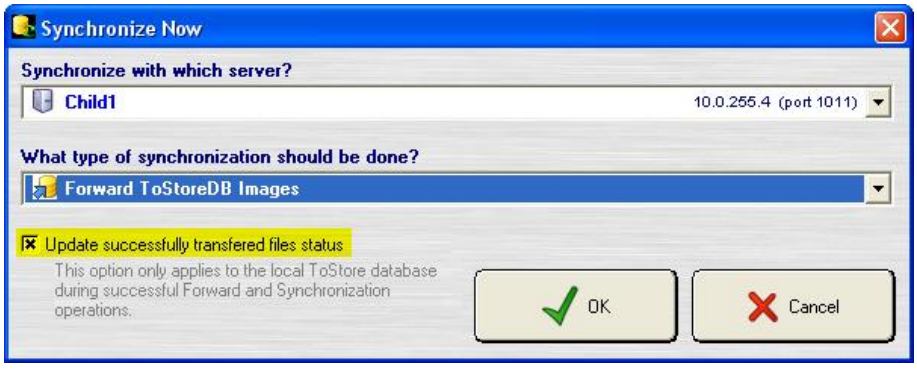
PatientDB information can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:

- **Forward PatientDB** will send all patient folder and demographic information from an initiating sync server to a targeted, remote sync server.
- **Synchronization PatientDB** will send all patient folder and demographic information to the targeted sync server. It will also retrieve the information from the targeted sync server and store them locally.
- **Retrieve ToStoreDB** will target and pull all patient folder and demographic information from a remote sync server.

7.5 Sync Now Option: Update Successfully Transferred Files Status

Unlike scheduled synchronizations, when an on-demand (Synchronize Now) **Forward ToStoreDB Images** or **Synchronize ToStoreDB Images** is performed, by default the local ToStoreDB does not get cleared.

To clear out the ToStoreDB after an on-demand synchronization completes, select the **Update successfully transferred files status** radio-button on the 'Synchronize Now' dialog box.


Synchronize Now
Synchronize with which server?
Child1
10.0.255.4 (port 1011)
What type of synchronization should be done?
Forward ToStoreDB Images
Update successfully transfered files status
This option only applies to the local ToStore database during successful Forward and Synchronization operations.
OK
Cancel

8 APPENDIX C: XV SYNC COMMUNICATION LOGS

8.1 Overview

XV Sync creates logs that serve as useful troubleshooting tools for administrators managing sync server locations.

Log files are stored in the Apteryx install directory under a folder named *Logs*\. Logs can be opened/viewed in a text editor application such as Notepad.

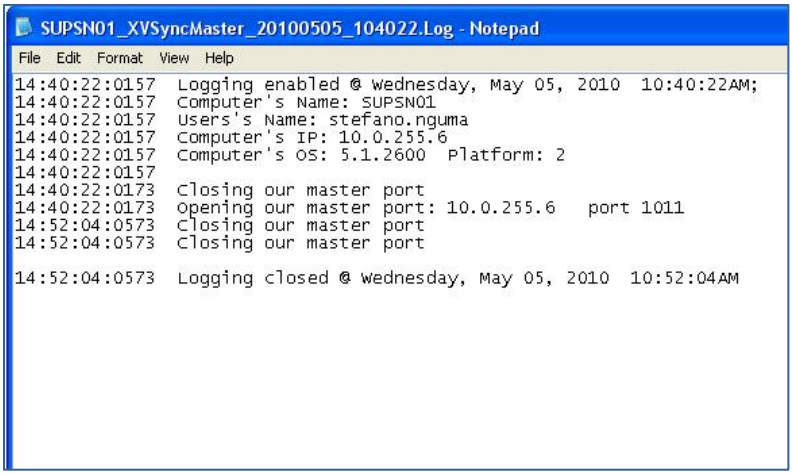
The following sections describe the following logs created on sync servers:

- Master Logs
- Communication Logs
  - Client log
  - Server log

8.2 XV Sync Master Log

When XV Sync is launched on a server, a master log is created in the */Logs/* folder with the following naming convention:

[Computer Name]_XVSyncMaster_yyyymmdd_hhmmss.log


SUPSN01_XVSyncMaster_20100505_104022.Log - Notepad
File Edit Format View Help
14:40:22:0157 Logging enabled @ Wednesday, May 05, 2010 10:40:22AM;
14:40:22:0157 Computer's Name: SUPSN01
14:40:22:0157 Users's Name: stefano.nguma
14:40:22:0157 Computer's IP: 10.0.255.6
14:40:22:0157 Computer's OS: 5.1.2600 Platform: 2
14:40:22:0157
14:40:22:0173 Closing our master port
14:40:22:0173 Opening our master port: 10.0.255.6 port 1011
14:52:04:0573 Closing our master port
14:52:04:0573 Closing our master port
14:52:04:0573 Logging closed @ Wednesday, May 05, 2010 10:52:04AM

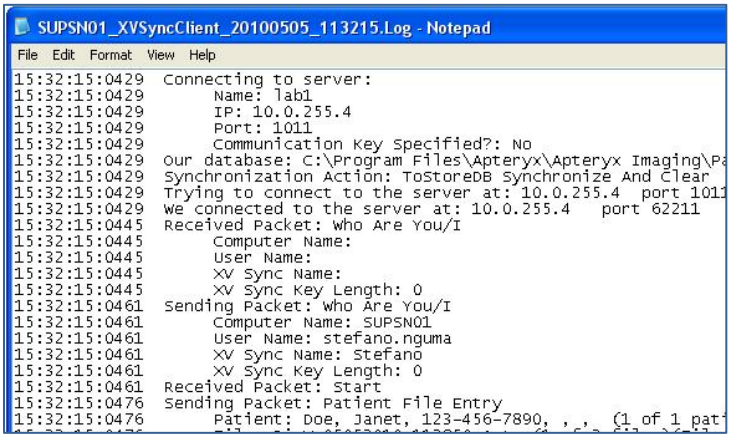
The log tracks information such as:

- When XV Sync was launched (logging enabled)
- Server information (Computer name, IP, port, OS etc.)
- User's domain name (user name)
- When XV Sync was exited (logging closed)

8.3 XV Sync Communication Logs: Client Log

When a sync server initiates and completes a sync with a remote sync server, a client log is created in the local */Logs/* folder with the following naming convention:

[Computer Name]_XVSyncClient_yyyymmdd_hhmmss.log


SUPSN01_XVSyncClient_20100505_113215.Log - Notepad
File Edit Format View Help
15:32:15:0429 Connecting to server:
15:32:15:0429 Name: lab1
15:32:15:0429 IP: 10.0.255.4
15:32:15:0429 Port: 1011
15:32:15:0429 Communication Key Specified?: No
15:32:15:0429 Our database: C:\Program Files\Apteryx\Apteryx Imaging\Pa
15:32:15:0429 Synchronization Action: ToStoreDB Synchronize And Clear
15:32:15:0429 Trying to connect to the server at: 10.0.255.4 port 1011
15:32:15:0429 We connected to the server at: 10.0.255.4 port 62211
15:32:15:0445 Received Packet: Who Are You/I
15:32:15:0445 Computer Name:
15:32:15:0445 User Name:
15:32:15:0445 XV Sync Name:
15:32:15:0445 XV Sync Key Length: 0
15:32:15:0461 Sending Packet: Who Are You/I
15:32:15:0461 Computer Name: SUPSN01
15:32:15:0461 User Name: stefano.nguma
15:32:15:0461 XV Sync Name: Stefano
15:32:15:0461 XV Sync Key Length: 0
15:32:15:0461 Received Packet: Start
15:32:15:0476 Sending Packet: Patient File Entry
15:32:15:0476 Patient: Doe, Janet, 123-456-7890, , , (1 of 1 pat

The log tracks information such as:

- When sync was initiated (logging enabled)
- Server information (Computer name, IP, port, OS etc.)
- Type of synchronization performed (Synchronization Action)
- User's domain name (user name)
- Remote sync server information (Computer name, IP, port, database location etc.)
- File transfer information (each patient image and patient file forwarded and/or retrieved during the sync operation)
- When the sync completed (logging closed)

8.4 XV Sync Communication Logs: Server Log

When a remote sync server receives a sync request, a server log is created in the local */Logs/* folder with the following naming convention:

[Computer Name]_XVSyncServer_yyyymmdd_hhmmss.log

LAB1-XP_XVSyncServer_20100505_113259.log - Notepad
File Edit Format View Help
15:32:59:0781 Sending Packet: Who Are You/I
15:32:59:0781 Computer Name:
15:32:59:0781 User Name:
15:32:59:0781 XV Sync Name:
15:32:59:0781 XV Sync Key Length: 0
15:32:59:0781 Received Packet: Who Are You/I
15:32:59:0781 Computer Name: SUPSN01
15:32:59:0781 User Name: stefano.nguma
15:32:59:0781 XV Sync Name: Stefano
15:32:59:0781 XV Sync Key Length: 0
15:32:59:0781 Network Speed Test: 0 ms
15:32:59:0781 We are now servicing this connection
15:32:59:0796 Sending Packet: Start
15:32:59:0812 Received Packet: Patient File Entry
15:32:59:0812 Patient: Doe, Janet, 123-456-7890, , , (1 of 1 pat
15:32:59:0812 File: DigX_05052010_112850.Auto (1 of 2 files)(Filer
15:32:59:0812 Matching: Doe, Janet, 123-456-7890,
15:32:59:0812 No matches
15:32:59:0812 Creating patient folder and record
15:32:59:0953 Folder Created: DOEJANET_123456789
15:32:59:0953 Sending Packet: Need Patient File
15:32:59:0968 Received Packet: File in chunks: file size is 55.07

- The log tracks information such as:

- When the sync request was received (logging enabled)
- Server information (Computer name, IP, port, OS etc.)
- User's domain name (user name)
- Remote sync server information (Computer name, IP, port, database location etc.)
- Network speed test (reports on the internet connection speed between sync servers; units – milliseconds)
- File transfer information (each patient image and patient file received and/or taken during the sync operation)
- When the sync completed (logging closed)

9 APPENDIX D: XV SYNC EMAIL NOTIFICATIONS

9.1 Overview

XV Sync can be configured to send useful email notifications that inform administrators when synchronizations with other sync servers start and complete. Additionally, a 'sync error' email notification will be sent whenever sync operations fail.

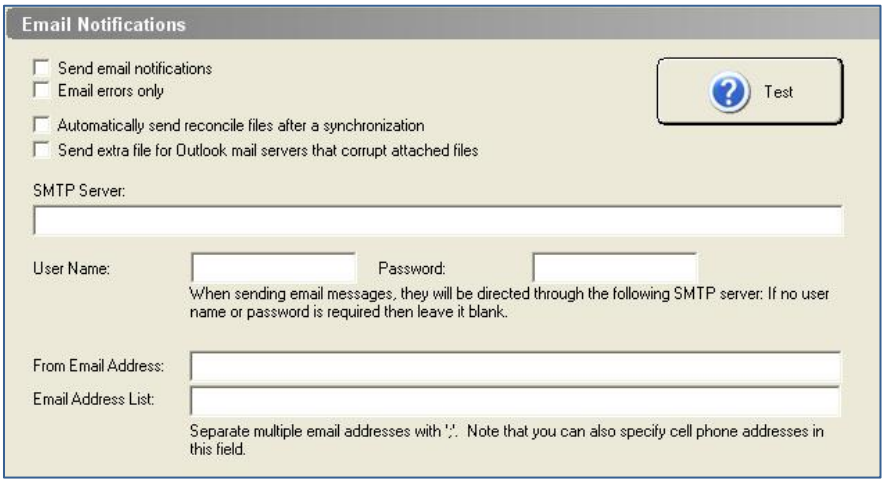
XV Sync's email utility does not support connections that require a secure socket layer (SSL) or authenticated encryption.

9.2 Configuring Email Notifications

Email notifications can be enabled and configured on the 'XV Sync Options' screen.

9.2.1 From the navigation toolbar on the left, select **Preferences** to open and configure the 'XV Sync Options' screen.

9.2.2 Scroll down to the 'Email Notifications' section.


Email Notifications
Send email notifications
Email errors only
Test
Automatically send reconcile files after a synchronization
Send extra file for Outlook mail servers that corrupt attached files
SMTP Server:
User Name:
Password:
When sending email messages, they will be directed through the following SMTP server. If no user name or password is required then leave it blank.
From Email Address:
Email Address List:
Separate multiple email addresses with ';'. Note that you can also specify cell phone addresses in this field.

9.2.3 Complete the following fields:

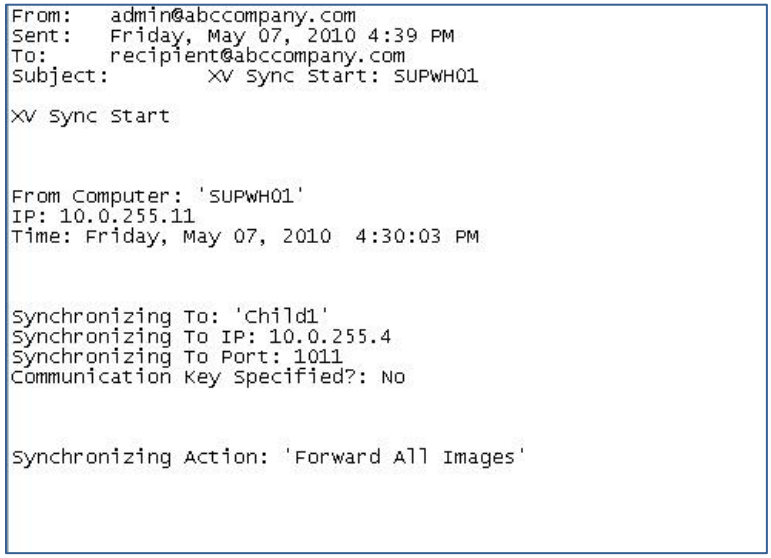
- **Send email notifications** - Enables XV Sync to send communication notifications via email to recipients.
- **Email errors only** – If enabled, an email notification will be sent to recipients only when failures occur. ***Note: Send email notifications*** *must be enabled for this option to work.*
- **Automatically send reconcile files after a synchronization** –
- A reconciliation file provides an administrator the ability to check the patient database on their sync server against a database on a remote sync server. The reconcile file will be sent to a targeted remote sync server once the synchronization completes.
- Enable this feature to automatically send a reconcile file to recipients after every on-demand or schedule synchronization occurs.
- **Send extra file for Outlook mail servers that corrupt attached files** – This is a known issue with Microsoft Exchange Server 2003. Enable this option if this occurs.
- 'SMTP Server' – Enter the name or the IP address of the SMTP server to allow XV Sync to send outgoing mail.

- 'User Name' and 'Password' – If the SMTP server requires authentication, enter the user name and/or password in the provided fields.
- 'From Email Address' – Enter the sender's email address in the provided field.
- 'Email Address List' – Enter the recipient(s) email address in the provided field. Multiple email addresses must be separated with a semi-colon (;).

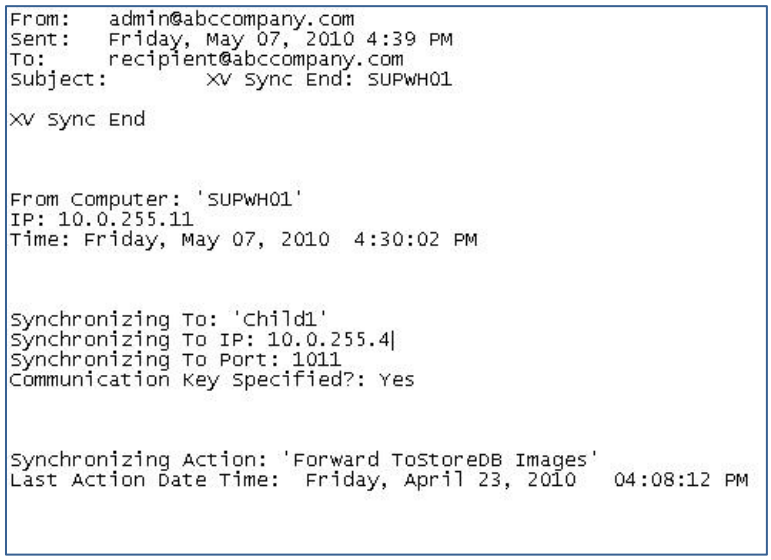
9.2.6 Select the **Test** button to send a 'test' email to the recipient(s) in the email address list.

9.3 Sample Email Notifications

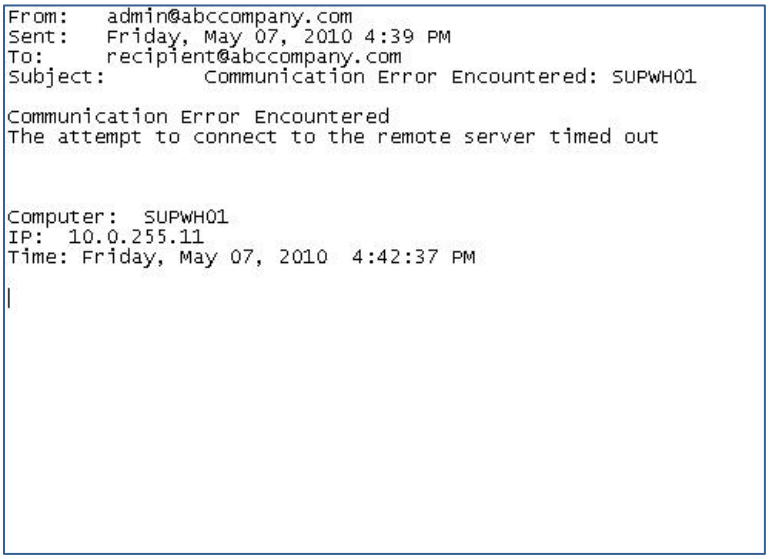
- **'Sync Start' Email Notification**



- **'Sync End' Email Notification**


From: admin@abccompany.com
Sent: Friday, May 07, 2010 4:39 PM
To: recipient@abccompany.com
Subject: XV Sync End: SUPWH01
XV Sync End
From Computer: 'SUPWH01'
IP: 10.0.255.11
Time: Friday, May 07, 2010 4:30:02 PM
Synchronizing To: 'Child1'
Synchronizing To IP: 10.0.255.4
Synchronizing To Port: 1011
Communication Key Specified?: Yes
Synchronizing Action: 'Forward ToStoreDB Images'
Last Action Date Time: Friday, April 23, 2010 04:08:12 PM

- **'Sync Error' Email Notification**


From: admin@abccompany.com
Sent: Friday, May 07, 2010 4:39 PM
To: recipient@abccompany.com
Subject: Communication Error Encountered: SUPWH01
Communication Error Encountered
The attempt to connect to the remote server timed out
Computer: SUPWH01
IP: 10.0.255.11
Time: Friday, May 07, 2010 4:42:37 PM

10 APPENDIX E: XV SYNC PERFORMANCE OPTIMIZATION

10.1 Image Volume Worksheet

When planning an XV Sync implementation, provisions need to be made to accommodate the following:

- Anticipated size of data to be transferred during sync operations
- Anticipated growth of patient databases as a result of synchronizations

Complete the following worksheet to gather the necessary information that can assist Apteryx, Inc. in making recommendations to optimize the performance of your implementation.

Question	Answer
What is the average file size of the different digital images captured at each clinic? ➢ Hardware model: ❖ IO ❖ PAN ❖ CEPH ❖ CT ***Note:*** *The following benchmarks will be used if unknown:* ➢ *Single Intra-oral X-ray : 0.5 MB – 2MB* ➢ *Intra-Oral Camera Image: 5 MB* ➢ *Full-mouth layout: up to 30 MB* ➢ *Panoramic X-ray: 5MB*	
How many images are captured of each type on a monthly basis? ➢ Hardware model: ❖ IO ❖ PAN ❖ CEPH ❖ CT	
Does the organization feel that the number of images and the file sizes will be growing in the future?	
What is the size, version, and manufacturer of any existing digital images?	

***** END OF DOCUMENT *****